

MARINE RECORD

ESTABLISHED 1878.

VOL. XXIV, No. 9.

CLEVELAND -- FEBRUARY 28, 1901 -- CHICAGO.

\$2.00 Per Year. 5c. Single Copy

HANDS FOR THE NAVY.

According to the result of the physical examination for admission of landsmen into the navy the western boys seem to have an advantage in physique over those of the Atlantic seaboard. Dr. Skitt, of the training ship Hartford, in his report to the Surgeon General of the Navy, says: "In connection with the physical examination of the landsmen received from the U. S. S. Richmond and Vermont on the arrival of the Hartford from the Pacific station a great superiority has been observed as regards the outward manifestations of a sound physique among those born in the middle west over the native of the Atlantic coast. There were noted among the recruits from the eastern cities a large number of persons who would probably develop unfitness for the service by reason of catarrhal conditions of throat and nose, as well as from relaxation of inguinal rings, these conditions being far less frequent among the recruits from the western states."

"While the most striking feature differentiating the two classes was as regards general appearance, yet the following averages, obtained from measurements, are in a degree indicative of this superiority. Of 163 men, native of the eastern coast cities the averages were: Age 20.3 years, weight, 129 pounds; height, 66 inches; chest expansion, 3.2 inches; circumference of arm, 11 inches, and circumference of thigh, 19 inches.

Among those born in the middle west, numbering ninety-two, the average was: Age, 20.5 years; weight, 135 pounds; height, 67 inches; chest expansion, 3.4 inches; circumference of arm, 11.5 inches, and circumference of thigh, 19.5. Of the 251 recruits who were enlisted for this ship about a year ago, all coming from the west, the following averages pertained at time of first examination: Age, 21; weight, 139 pounds; height, 66.6 inches; chest expansion, 3.2 inches; circumference of arm, 11.7 inches; of thigh, 19 inches."

THE ST. LAWRENCE LLOYDS.

A bill has been presented in the Dominion House of Parliament this week, embodying a petition from Francis H. Clergue and Ernest V. Clergue, of Sault Ste. Marie, Ont.; Edward V. Douglas and F. S. Lewis, of Philadelphia; Hon. Robert Mackay, Hon. Raoul Dandurand, Hugh A. Allen, David W. Campbell, George E. Drummond, Robert Reford and John Torrance, of Montreal, setting forth "That it would be in the interest of Canada that a fire and marine insurance company, called 'The St. Lawrence Lloyds,' be incorporated, with a capital of five millions of dollars, with the right to carry on the business of inland navigation and transportation insurance, under the insurance act, and to own, maintain and navigate on the lakes and rivers of Canada, ice-breakers and wreck-relieving steamers, and to carry on the usual business of a wrecking company." The head office of the company would be in Montreal.

ANTARTIC EXPLORATIONS.

Three South Polar expeditions will start out this season and approach the great Antarctic continent at three equi-distant points.

The largest is the German party, for which the imperial government has supplied nearly \$500,000. It will be in charge of Professor Drygalski. The vessel for the expedition, now building at Kiel, will be modeled on the modern whaler, not on the lines of the Fram, which was built for drift work and inland seas and would turn bottom-up in the Antarctic Ocean. The expedition is planning to be away two years, and will devote itself chiefly to deep sea sounding and dredging.

The British expedition, next in importance, is to be under Lieutenant Scott, of the Royal Navy. It is backed almost

entirely by Dr. Longstaff, of the Royal Geographical Society, who has subscribed for it upward of \$200,000. They will go in a modern whaler, with extra cabin accommodations and a full scientific outfit, first to a southern point in New Zealand or Australia, and from there approach the part of the Antarctic continent known as Victoria Land. Their main object is perhaps the most interesting one of the three parties. It is to find the south magnetic pole, which has never yet been accurately located.

The Norwegian expedition is the smallest of the three and least will be expected of it. It will be in charge of Otto Nordenskjold, son of Baron Nordenskjold, of Arctic fame, a man about twenty-six years old. He has secured Captain Larsen and the ordinary sealing vessel, the Foam, in which Larsen discovered Szenforn Land in 1893. The expedition will be to that region. Szenforn Land is supposed to be a part of King Oscar Land, and the route thither is by Cape Horn. Nordenskjold himself is an ardent zoologist and will specialize upon zoology and fossils.

LARGE TONNAGE.

The new White Star steamer Celtic, which is now being built at Belfast, Ireland, has the following dimensions: Length 680.9 ft.; beam, 75 ft.; depth, 44.1; gross tonnage, 20,880; net tonnage, 13,650. The old Celtic, which this vessel replaces, had a gross tonnage of only 3,867. The new ship is not intended for speed; but she will carry 1,700 steerage passengers in 2, 4 and 6 berth staterooms, each stateroom provided with the necessary conveniences. As compared with length, the beam of the Celtic is the largest of any merchant ship afloat; and her displacement is 33,000 tons, as compared with the 28,500 tons of the Oceanic of the same line.

IRON ORE MINES IN CANADA.

It is said on the authority of the Ontario bureau of mines that J. P. Morgan and his associates in the steel deal have secured options on valuable iron deposits in Canada.

W. E. H. Carter, the inspector of the bureau, who has returned to Ottawa from an inspection trip in the north-western part of Ontario, says: "Along the Attickok river the iron deposits extend, so far as is known, for a distance of over twelve miles, to Steep Rock Lake, and they have been surveyed and taken up for the whole distance.

The New Rainy river railway passes through this district and would be available for the shipment of ore. The principal deposit is that of the McKellars, where the iron ore is in a hill, which has been explored by a tunnel of a length of 300 feet.

This property is now bonded to the American Steel & Wire Co. It is anticipated that a great industry will be established."

SHOOTING IN THE AIR.

The prevention of hail storms by acetylene explosions is to be undertaken by Maggiora & Bianchi, of Italy, who have invented a cannon for this purpose. This instrument is favorably noticed by the French delegates to the Padua Congress, of November 1900, which was held to consider the question "of firing at clouds to prevent hail." The device includes a generator of acetylene gas, a tube, or cannon pointing upward, and a device for electrically firing the gas. It is proposed to arrange these in groups of 50 all connected by wires, and the generator is charged with 65 lbs. of carbide of calcium, sufficient for 1,000 shots, or 6 months service. No experiments are reported; but the inventors will undertake, this year, to protect grape growers against damage by hail, "for a comparatively small sum." This report is sent in by John C. Covert, U. S. Consul at Lyons, France. It seems that something of this sort was tried years ago in Kansas and Nebraska but with no success.

TO RAISE THE MAINE.

A firm of Chicago contractors have been notified that they were the successful bidders for the work of raising the wreck of the battleship Maine sunk in Havana harbor. If no hitch occurs in the process of drawing up the contract, Chamberlin & Co. will undertake the task. With it is coupled the job of raising the Spanish transport Alfonso XII, which is beached near by the Maine. The firm were one of 12 bidders.

The Chamberlin agreement is to raise both vessels for the salvage there is in them. It also covenants to pay the United States Government 3 per cent. of all proceeds, besides restoring all personal property which belonged to the officers and the crew of the Maine.

If that contract is fulfilled, an ambition cherished for two years by N. F. Chamberlin will be realized. The firm were formed expressly for the purpose, and, according to Mr. Chamberlin, it is expected that more than \$1,000,000 will be made by the concern in the undertaking.

The plans provide for the erection of a cofferdam around the sunken Maine while the beached transport will be raised out of the water and hauled on shore by means of a system of purchases. The cofferdam for the "Maine" will be a considerable affair. It will be oblong in contour, including within it every piece of wreckage from the Maine. Its construction will consist of brush, rock, earth, gravel, and sack sand, so constructed as to be practically impervious to water. The base will be 80 feet wide and the surface 35 feet broad, large enough for a team to travel along it in safety. It will be 45 feet in height, the incline, of course being on the inside.

The brush, the main feature of the dam, will be tied in bundles 30 feet in length, composed of broken joints, so as to make a solid bundle. These bundles will be weighted with rock and sunk into place. They will be interlaid and woven together in a way that will form a perfect piece of network around the ship, and as each layer goes down earth and gravel will be packed among them. Heavy bags of sand will compose the front end of the base, while a few layers of them will be placed on top, to be surmounted with earth.

Once constructed, the contractors will put the pumps to work, and when the bottom of the harbor is reached a well will be dug in it to hold all the bilge water that may leak through. Pumps will be kept at work whenever the well fills with water.

The plans for raising the Alfonso XII are radically different. The transport, one of the best Spain had, is beached with her bows sticking out of the water against a large flat rock. With the purchases once set it is expected that within two hours she will be hauled upon the rock, where she can be overhauled.

The operation of raising both ships will cost about \$75,000, the contractors say, while the salvage in the Maine is expected to be enormous. In her hold, according to the Government schedule, there is now \$500,000 worth of ammunition and 100 tons of copper and brass. A hundred engines are stowed away in the hull of the vessel, while the armament and fittings are figured to be worth considerable money even if the vessel cannot be repaired.

But this is a contingency not anticipated by the contractors. The explosion on the Maine was in the bow, and only that part of the vessel was wrecked. The construction of a bulkhead will, the contractors believe, shut off the bows and then the war ship will float.

THE British Admiralty Office is sounding the Clyde ship builders on the proposition to construct five submarine vessels similar to those which have recently had successful trials in the United States, and known as the Holland type.



CHICAGO.

Special Correspondence to The Marine Record.

The small steamer William Rudolph has been sold by the C. Reiss Coal Co., of Sheboygan, to A. F. Temple, of Muskegon. The Rudolph, which has a measurement of 267 gross tons, will in future carry lumber for the Temple manufacturing plant. The price paid for the craft is not stated.

The Goodrich Transportation Co., noted for the excellent up-keep of its passenger and cargo steamers, is already preparing for next summer's business, and it is easy to predict that it will prove to be the banner year ever experienced in the existence of this old established and favorably known line.

The Graham & Morton Transportation Co. will run their first boat of the season, the City of Chicago, April 1, just 45 days earlier than ever before. The City of Milwaukee is being entirely rebuilt, but as yet no boat has been obtained to take the place of the City of Louisville, destroyed by fire about two months ago.

There will be a rate war on both passenger and freight rates next season. The Barry passenger rates last year were lower than the older line, and the Goodrich line cut freight rates to 1 cent per hundred. Now the Goodrich passenger rates are to be cut to meet the Barry rates and the 1 cent freight rate maintained.

At the shipyard of Johnston Bros., Ferrysburg, Mich., a new steel tug boat for Ihmig & Son, of Port Washington, Wis., is being built. The hull is 75 ft. in length, 16 ft. beam and 7½ ft. hold. Johnston Bros. will also furnish the 7 by 12 foot boiler, and she will be given the high pressure engine that was formerly in the tug Starke.

Sorry to learn that my pen-pushing colleague at Cleveland has been keeled over for a month with the grip, still and all, he has gripped so much in his time that a few fresh nips of the grip ought not to faze him any, in fact, be rather pleasant than otherwise. I'll stop now, or I might give him the gripes and then find some back action at me or my copy, however, a freshening of the grip don't amount to much, let him put the "devil's claws" on so as to clap a stopper on its going any further, hope he'll soon get around again.

A grand lodge of the Firemen's Protective Association is being formed here this week, and delegates are in attendance from other lake ports, a scale of wages will be made and submitted to the two towing companies now doing all of the lake business. As the movement originated chiefly in Cleveland, it is thought that the Great Lakes Towing Co. will pay the best wages made, and this may be another "thorn in the flesh" for the Maytham Towing & Wrecking Co. to meet at the end of a season when earnings are closely figured.

One of the most important combinations ever effected in Chicago real estate is at the point of completion. H. C. Frick, J. Kennedy Tod, and the Lake Michigan Land Co. have agreed to build a harbor accessible to their holdings at East Chicago, Ind. More than this, other financial interests have agreed to buy and occupy at least 50 acres adjacent to the proposed harbor, and to erect a \$1,000,000 plant for the manufacture of steel. A bill to enable the property holders to build a canal to the Calumet river has been introduced in the Indiana Legislature and unanimously passed by the Senate. The initial cost of the harbor will be nearly \$250,000. The present value of the real estate interests represented in the deal is estimated to be from \$2,500,000 to \$4,000,000.

It has been decided by Judge Tuley that elevator men have no right to store their property with that of the public. The case was appealed to the Supreme Court, where it is still pending. Should the amendment pass it is probable that the Board of Trade will be without storage room for grain, and the elevator owners say that in such an event they will have but one alternative—that of withdrawing their warehouses from the public. This would then make them private institutions, thus cutting off the supply of public storage room. The grain commission firms have charged that the owners of the elevators had an unfair advantage over them in being allowed to own the property they store in their houses. Among the elevator men, however, the opinion prevails that if they are not given an opportunity to clean the grain there will not be enough cereals of the contract grade to trade on. It is considered all round that this is an awkward time to bring the matter up.

This is the way the Chicago Trans-Atlantic trade is being figured on. On April 25 the steamer Northwestern, built at Chicago and laden with Chicago produce, will leave Chicago for Hamburg. The following day a sister steamer similarly laden will follow with Liverpool the objective port. On May 1 and 4 the Northeastern and Northtown are to start, designed to Hamburg and Liverpool. Eighteen days will be consumed in passage through the lakes, St. Lawrence river, Gulf of St. Lawrence and across the Atlantic. Although about two months intervene before the first of these

leaves the Chicago wharf, the Northwestern Steamship Co., is in daily receipt of application for space aboard, and a number have been rejected because of the character of the cargo. Large consignments of flour, lard, meats, agricultural implements, lumber, logs, copper and copper ore have been already arranged. One Chicago manufacturer of agricultural implements made application during last December for the entire space of the four vessels for his wares, but his request was denied because the weight of such a cargo would be too light for the space occupied, and only that space was granted to him as is allotted to his class of merchandise. The promoters of the new line figure that they can land Chicago merchandise in London or Liverpool as quickly by this route as can be done by the old route, by rail to New York and thence by water to their destination. The first two steamers will not leave the hands of the builders until April 15.

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record.

Word has come from Marinette that the E. S. Hartwell Lumber Co., of Chicago, has purchased of the Bay De Noquet Company of Nehama, Mich., its cut for 1901, amounting to 25,000,000 ft. The consideration is nearly \$500,000 and is the second largest deal of the season.

The erection of more large grain elevators is being talked of for the head of the lakes, this time the Armour interests in connection with the Milwaukee road, which reaches Superior and Duluth, over the tracks of the Northern Pacific line. Armour has elevators at several other points but no storage at the head of the lakes.

The Northwestern Coal Co. will build another dock near the gas works at Superior and no time is to be lost in its construction. According to the plans which have already been drawn, the dock will be one of the largest at the head of the lakes, and one of the most convenient of access for the various railroads, as well as vessels coming into the harbor.

During his recent absence in the east Capt. A. B. Wolvin looked into the operations of the International Navigation Co. One of the two steamers Paraguay and Asuncion, both of which are lake built vessels, is transporting coal from Baltimore to Galveston, and cotton from the latter port to Boston. The other will be sent to the Pacific ocean soon to engage in the coast trade.

The Canada-Atlantic Transit Company is said to have contracted to move half a million bushels of wheat at the opening of navigation from Superior to Montreal at 5¼ cents. One small Canadian steamer has been chartered at two cents for wheat, Superior to Georgian Bay, opening shipment. There is just a million bushels more grain in store here than at this time last season.

The Duluth Dredge & Dock Co. launched on Saturday last what is said to be the largest single dipper dredge ever built. The contract for this submarine ground disturber was placed with Napoleon Grignon, and his work has given every satisfaction to the owners. Including the scows, the investment represents an outlay of \$86,000, half of which, or \$42,000, has been placed in machinery. The dipper is of eight cubic yards capacity and can make two lifts a minute in five fathoms of water.

The action taken by the officials of the Lumber Carriers' Association organized at Detroit last month and which meets with the Longshoremen's Association this week at Ashland is being awaited here with some interest. Capt. O. W. Blodgett of Bay City and Mr. Edward Hines of the Hines Lumber Co., Chicago, are prominent members of the association and are both men who are desirous of treating labor in the fairest possible manner so that the best possible results are looked for from this meeting of labor and capital.

The A. Booth Packing Company's new steel passenger and freight steamer, now nearly ready for launching at Toledo, will be named Argo. She is to take the place of the Hiram R. Dixon on the Duluth, Port Arthur & Isle Royale route and will be able to make three trips each week if the business warrants. The Argo will cost the Booth Packing Company, when completed and equipped, \$125,000, and is said to be one of the finest boats of the class ever built for the lake trade. Her cabin will contain forty-one staterooms, capacity of accommodating 120 people. Her short excursion capacity is fixed at 800. The dimensions of the new boat are as follows: Length over all, 181 feet; keel, 170 feet; depth, 12.6 feet; beam, 31 feet. Her engine will be triple-expansion, and steam is to be supplied by tubular boilers.

With the opening of lake navigation this spring will come the sailing from Chicago of the first steamers plying between the lakes and Liverpool and Hamburg under the United States flag. The steamship company that is to make this innovation in transatlantic trade is the Northwestern Steamship Co., organized by Chicago and New York capitalists. Charles Counselman of Chicago is treasurer, and Elliot Norton of New York is the president. Four freight steamers of the largest size that can pass the Welland canal are being built for the company at South Chicago by the Chicago Ship Building Co. Three of the ships are in water at present, and the fourth is to be launched about the beginning of next month. She is to be called the Northtown. The sister ships are the Northwestern, the Northman and the Northeastern. They are to cost about \$1,000,000. Their dimensions are 256 feet length and 42-foot beam.

CLEVELAND.

Special Correspondence to The Marine Record.

With the Carnegie deal closed all of the largest steamers on the lakes will be in the hands of that syndicate.

The Cleveland Steel Canalboat Co. chartered the small wooden steamer Mary H. Boyce for the Cleveland-Buffalo trade next season.

It may be of interest to note that the Bessemer Steamship Co. (Rockefeller fleet) does not figure among the firms taken in by the United States steel corporation.

Capt. George P. McKay and C. H. Keep, of Buffalo, representing the Lake Carriers' Association, are in Washington, looking after aids to navigation on the Great Lakes. They are seeking to obtain more light for the lower Detroit river, and additional gas buoys for other channels.

The grip ought to have known enough to have steered clear of Harvey D. Goulder, Esq., no use attempting to fool with a physique, temperament and disposition of that caliber. In fact, there is no leisure time or inclination evidenced to be annoyed by trifles, the evidence part in particular.

The few cargoes of grain handled at this port by contractor Martin Connors has now struck the zealous eye of the International Longshoremen's Association, and about the middle of March a convention will be held here, at which time measures will no doubt be taken to oust Connors and place the work direct in the hands of the local union.

Another steamer has been added to the fleet of J. C. Gilchrist, he purchased of Hawgood & Avery, a day or two ago the George F. Williams. This gives him the largest individual fleet on the chain of lakes. The Williams is a wooden steamer of 1,888 gross and 1,506 net tonnage. She was built in 1889 and has a keel length of 280 feet with a beam of forty-one feet. The consideration is not named.

Engineers are banking on having all of their requests granted by the Lake Carriers' Association, as regards the re-classing of steamers for a change in wages and help. Some of the leading firemen are on the lookout for oilers' berths, and have got their boats picked out according to a report I heard a day or two ago. There has been no meeting of the Lake Carriers' Association held about the matter, but when there is, it is safe to say that reasonable and decided action will rule their deliberations.

The Maytham Towing and Wrecking Co. will need all of its vim to buck against the strong array of talent and capital comprised in the Great Lakes Towing Co. This is to be the challenge season, both in the courts and on the lakes, or rather at lake ports. A good many contracts for season towing have already been placed and still some soliciting is being done. There is no gainsaying the adage that competition is the life of trade, but the Great Lakes Towing Co. is big enough to swamp any opposition or independent line of tugs that might attempt to work, crumbs of course may be picked up here and there, but where there is towing to be done the Great Lakes Towing Co. will do it or know the reason why.

A contract for a large steel steamer that will carry about 6,500 tons of ore was placed by Cleveland capitalists a few days ago. The boat will be built by the Jenks Ship Building Co., at Port Huron. The deal was closed by Mr. Henry Steinbrenner and it is understood that the Minch estate will have the controlling interest in the new boat. The steamer will be an exact duplicate of the Capt. Thomas Wilson, which was built at the same yard. She will be 410 feet over all, 420 feet keel, 50 feet beam and 28 feet deep. She will have triple expansion engines, cylinders 23, 38 and 63 inches by 40 inch stroke. Steam will be furnished by three Scotch type boilers, twelve feet in diameter and twelve feet long. She will not be ready for business until late in the season.

The following queer looking case is reported this week: "The Pittsburg & Toledo Transportation Co., the owners of the steamer Idler, which burned at a slip in Toledo, January 12, 1896, were refused damages in the common pleas court on Monday after a trial lasting twenty-five days. The company sued J. C. Gilchrist and fourteen others for fire insurance amounting to \$3,000. The policy contained a clause to the effect that if it were ever found necessary to commence suit to recover, the suit should be commenced against a certain Buffalo attorney. The company claimed that it could not get service upon this attorney because it was impossible to locate his legal residence after the vessel burned. The jury determined that the attorney's legal home was in Buffalo and that the case should have been brought against him there."

The directors of the Great Lakes Towing Co. held their annual meeting yesterday afternoon at their offices in the Western Reserve building. The election of officers was the only business of public interest transacted. A new vice president was added to the list, and W. E. Fitzgerald, of Milwaukee, was elected to the position, which makes him a member of the executive committee. The other officers are re-elected and the list follows: President and treasurer, T. F. Newman, Cleveland; vice-president, Capt. James Davidson, Bay City; second vice-president, Capt. A. B. Wolvin, Duluth; third vice-president, Edward Smith, Buffalo; fourth vice-president, W. E. Fitzgerald, Milwaukee; general manager, Capt. W. A. Collier, Cleveland; secretary, M. H. Wardwell, Cleveland. Executive committee, Gen. G. A. Garretson, chairman, Cleveland; Capt. James Davidson, West Bay City; Capt. A. B. Wolvin, Duluth; L. M. Bowers, C. E. Grover, H. G. Dalton, T. F. Newman, Cleveland; W. E. Fitzgerald, Milwaukee. General counsel, James H. Hoyt, Esq., Harvey D. Goulder, Esq., Cleveland.

BUFFALO.

Special Correspondence to the Marine Record.

Capt. John J. Burns has been re-appointed harbor master for the term of two years, at a salary of \$1,200 per.

Edward Smith, of the firm of Brown & Co., always a busy, energetic man, is more active than ever recently, and is now becoming interested in the coast trade.

There is no move on the part of the elevator owners as yet to reorganize the pool. Most of the larger owners are away and will not return for some time. There seems to be a general idea that the pool will be continued. The existing arrangement, which has proved satisfactory, does not expire until April 1.

The Perrysburg and Toledo Transportation Co. would like to find out the proper address of that Buffalo attorney representing a fire insurance company that they took a policy out with a couple of years ago. Of course they only deserve a grand laugh to the tune of about \$3,000 for not doing business with proper business people.

The old-established and favorably-known shipchandlery firm of Howard H. Baker & Co., leads Buffalo in all ship stores' supplies. The firm already see a very busy season ahead, and are making full preparations to meet all that can come before them. It is always a pleasure to do business with so reliable a house as H. H. B. & Co., where all transactions are made agreeable.

The lowest of the bids opened this week by Maj. Thomas W. Symons, United States Engineer, for putting a concrete superstructure on a section of the south harbor breakwater, was submitted by Mosier & Summers, amounting to \$162,030. The other bids received for the same work were: Frank W. Carter, \$168,233; Buffalo Dredging Co., \$196,595; James B. Donnelly, \$205,495; Hughes Bros. & Bangs, \$213,200; Baker & Judson, \$240,640, and L. P. & J. A. Smith Co. The work included in the contract takes in 2,000 feet of breakwater in the south harbor section that was damaged by storm last fall. A concrete superstructure will take the place of the damaged timber work. The contract is to be completed by December 1, of this year.

The fine, speedy little steamer Unique was well named, her luck was to have changed when she left Detroit river for the Lake Ontario trade, but it didn't. The Delaware River Navigation Co., of Beverly, N. J., now leave about \$23,000 in Ogdensburg, and take away the Unique in return. She is to be started on the Philadelphia-Wilmington route, it is also to be hoped that she will continue the start. The little craft has cost a mint of money up to date, contributed by quite a number of people, it may be said that her original owners lost most. She was to have astonished the rivers, now she can surprise the coast, it's a happy change of base as long as she don't cast odium on lake-built craft. Well! she is at the "burg" now and later we may hear of her from the Delaware.

I don't suppose that the RECORD wishes me to detail the chatter and opinions of one and another that I hear drop from day to day, about the engineers' intended strike, and the chances of the masters also joining. People are in and out of owners', managers' and agents' offices almost hourly, so that they are well acquainted with every phase of the situation, and I for one, think that the less newspaper friction stirred up in these cases, the better for all concerned, especially as there is nearly two months yet to know clearly the net earnings of a vessel on the opening trips. The Carnegie-Rockefeller-American Steel Co. syndicate will ferry their ten million tons of ore down the lakes even if it does cost a fraction of a mill per ton more than they expected, others can act according to going freights.

It has been very noticeable, both this winter and last, that lumber dealing firms are buying up tonnage to carry their own stuff, even firms that only require about a dozen cargoes each season to keep their business going, have been on the lookout for a small steamer and tow barge, trusting to charter them for a couple of trips when they did not need them themselves. One of the latest investments in this line is the change of ownership in the steamer Charles Hebard, with her tow barges Aloha and Annabel Wilson. The former owner is given as H. A. Tuttle, of Duluth, and the buyers the Nelson Holland lumber interests at Black Rock. The Hollands have a heavy tract of timber in Byng Inlet, Georgian Bay, and will cut a large amount of pine timber there this season. Services of the tows will be required for the entire season to transport it.

At no time since the Transportation Club of Buffalo was organized have the members of that social organization appeared to better advantage than on the occasion of the reception to the ladies at the Colonial Club. No detail was overlooked by the energetic committee, consisting of George Eighmy, Jr., traveling passenger agent of the Great Northern; George R. Lahey, agent, Wabash, and John C. Fitzpatrick, of the Transportation Club, aided by John S. Tyler, of the house committee of the Colonial Club. One remarkable feature of the event, as attesting the opinion in which the Transportation Club is held, was the opening of the Colonial Club rooms for the reception. It is stated that this is the first time the use of the elegant room has been extended to any outside organization, and the railroad men recognize the distinction shown them.

The Kendall Marine Reporting Co. would like the address of Thos. Smith and Jas. Irwin, two lake sailors. Any one knowing will confer a favor by writing Kendall Marine Reporting Co., Port Huron.

PORT HURON.

Special Correspondence to The Marine Record.

The steamer Hiawatha has succeeded the Omar D. Conger on the ferry route.

One of the life boats which is being built by Frank Smith will be put in the water in about a week.

The vessel owners of the city will begin making their annual repairs to their boats about March 1.

The steamer Progress is receiving new decks and a general overhauling at Dunford & Alverson's Dry Dock.

There are lots of new masters and pilots, as well as engineers, turned out daily at the U. S. Inspector's office.

The Cleveland Cliffs Iron Company has purchased the steamer Kate Butteroni, of Marine City, price not known.

Harvey D. Goulder, Esq., one of the most noted of marine attorneys of Cleveland, will appear in a case before the circuit court next week.

The center boards used in the life boats which are being built by Frank Smith at the Wolverine dry dock weigh 800 pounds each and are made of gun metal.

Mr. Frank Smith, of the Wolverine Dry Dock Co., is at work with a big gang of men building life boats for the U. S. life-saving service. He has twenty boats to build.

The Pere Marquette railway has a gang of men at work repairing the slip at the Court street yards. As soon as spring opens the steamer International will make regular trips between Sarnia and Port Huron connecting with the Erie & Huron.

Gordon Potter passed the examination for marine engineer, held last week, with a standing that enables him to serve as second engineer on any boat sailing the lakes. Mr. Potter is but 22 years of age and was most successful, where many much older failed. His many friends congratulate him on his success.

It is said that none of the Port Huron engineers or captains have received re-appointment up-to-date, although many of them expect to go on the same boats as they did last year. The reason that contracts have not been entered into up to the present time is because of the uncertain condition of vessel property.

The work on the new steel canal size steamer for Cheesbrough Bros., Bay City, at the Jenks Ship Building Co. yard is near completion. When launched, her place will be taken by another boat they have to build. The steamer for S. Neff & Son is being rushed as fast as possible. They have been delayed some by not getting enough material.

The directors of the National Steamship Company held their annual meeting in Chicago last Friday and elected the following officers: President—Colin McLachlan, of Port Huron, president of the McLachlan Transportation Co. Vice-President—Peter Reiss, president of the Reiss Coal Co., of Sheboygan. Secretary—Otto Huette, of Port Huron, secretary of the Port Huron Salt Co. Treasurer—Capt. J. G. Keith, of the firm of Keith & Co., Chicago.

DETROIT.

Special Correspondence to the Marine Record.

Mr. F. W. Wheeler, the former Bay City shipbuilder, is prominently connected with some tonnage now building for the coast trade.

Capt. Phillips, in charge of the steamer Wyandotte last season, will not command the boat the coming season as he has secured a position elsewhere. Many applications have been received for the position.

David Carter, general manager of the D. & C. line, sat up on Saturday for the first time since taken ill with the grip several weeks ago. Mr. Carter has been dangerously ill at times, but is now on the mend, and is expected to improve rapidly.

Joseph R. Oldham, of Cleveland, was placed on the stand in Judge Swan's court in the Wilbur-Martin collision case. He stated that the Martha, under the conditions after the collision would sink in about two minutes. The case is being hotly contested.

Capt. Sidney G. Millen has resigned the position of U. S. local inspector of hulls at this port after holding the job at \$1,800 for five years. Capt. Millen is a son of Capt. James W. Millen and will next season sail the Iron King, his resignation takes effect April 1.

The following statement of vessels passing through the Detroit river during the season of navigation is furnished through the courtesy of Postmaster F. B. Dickerson, Detroit, Mich.: Total number of passages from November 15 to December 18, 1,378; total number of passages during the season, 22,465; this is 276 less than in 1899 and 361 more than in 1898.

Michigan is always credited with a fairly large appropriation in the river and harbor bill, but Detroit gets nothing out of it. Talking the matter over the other day, a vessel agent suggested that there are places where a river wall of concrete might be built out to the harbor limits and a slightly boulevard made, besides being a place where boats could lay in foggy weather.

Capt. Wheeler Hancock, last season in command of the Rhoda Emily, is dead at his home, 647 Baker Street. He was 60 years of age, and had followed the lakes since boy-

hood. He once sailed the Desmond and Bottsford, and has lived at Algonac, Marine City and Saginaw, coming to Detroit last August. He was a civil war veteran and a member of Fairbanks Post, G. A. R.

The conference of marine engineers at Marine City, to consider the schedules and rules mapped out at the convention held in Cleveland a month ago, was attended by representatives of the association from many points on the lakes. The two Detroit lodges sent 150 members and Saginaw sent 100 members. It was unanimously agreed that the members should stand by the order, by which any attempt to break the schedule or its demands on vessel owners shall be the cause of refusal to take out a steamer.

The trial of the collision case resulting from the sinking of the steel tow barge, Martha, in Lake St. Clair last fall, came to a temporary close last Tuesday in the United States court. The case has been postponed from day to day on account of the illness of Harvey D. Goulder Esq., one of the leading attorneys in the case, who has been suffering from the grip. Then word was received that the father of Attorney Kelley had been stricken with paralysis and was dying. Mr. Goulder's condition being no better, Judge Swan adjourned the case for a few days, when it is hoped that the attorneys can return from Cleveland.

Judge Swan has decided that the barge Santiago alone was responsible for the loss of the barge Fontana in the rapids at the mouth of St. Clair river on August 3 last. In rendering his decision Judge Swan absolved the Kalivuga, Fontana and Appomattox from all the blame, and said that while he did not consider the Inter Ocean had been in any way the cause of the Santiago's sheer, she was censurable for attempting to pass her in the narrow channel at the point in the river where the collision occurred. In summing up the evidence, Judge Swan said he had carefully considered the mass of evidence presented, and in no way could any person be called individually responsible, but that he was forced to discredit the testimony of Capt. Eldridge, a former captain of the Santiago, who had given testimony entirely at variance with the facts in the case, he having stated that the Santiago had never been a good steering vessel, and was liable to sheer at any time, which testimony was entirely disproved by other witnesses.

THE NEW ITALIAN BATTLESHIPS.

Particulars are available of the Italian battleships Regina Elena and Vittorio Emanuele III., which are shortly to be begun, the one at Spezia and the other at Castellamare. The length of the Regina Elena will be 475½ feet over all, and 436.35 feet between perpendiculars; beam, 75.46 feet; displacement, 12,600 tons; engines about 20,000 horse-power; speed, 22 knots; capacity of bunkers, 2,000 tons; radius of action at a moderate rate of speed; 10,000 miles; armament, three 12-inch, twelve 8-inch, twelve 3-inch and twelve 1.85-inch guns; and four torpedo tubes; maximum thickness of armor, 9.84 inches. The Vittorio Emanuele III. will have length 473.42 feet over all, and 435 feet between perpendiculars; beam, 73.32 feet; displacement, 2,624 tons; engines, 20,000 horse-power; speed, 22 knots; radius of action, 12,000 miles; armament, two 12-inch, twelve 8-inch, twelve 3-inch, and at least twelve smaller guns and four torpedo tubes. The two ships will cost about 1,000,000 lire each. It is expected that the battleship Regina Margherita will be launched in the month of March, and the Benedetto Brin not later than September.—London Engineer.

NAMES OF MASTS.

In the modern six-masted sailing schooners the first three masts are called by the old names, fore, main and mizzen, and the fourth, fifth and sixth, the spanker-mast, the jigger-mast, and the driver-mast.

THE list of companies which will be absorbed by the United States Steel Corporation, thought it is believed without the loss of their names in their respective lines of trade, is as follows: Carnegie Co., with its subsidiary companies the Carnegie Steel Co., H. C. Frick Coke Co., Oliver Iron Mining Co., Pittsburg Steamship Co., Pittsburg, Bessemer & Lake Erie Railroad Co., Pittsburg & Conneaut Dock Co., Union Railroad Co. Other companies, including local railway, gas, water, limestone, and other interests. Federal Steel Co., including the Illinois Steel Co., Minnesota Iron Co., with its vessels, railroad and dock interests. Lorain Steel Co., and Elgin, Joliet & Eastern Railroad Co.; American Steel & Wire Co., with its allied iron mining, coke and vessel interests. National Tube Co.; National Steel Co., with its iron ore, coke and vessel properties. American Tin Plate Co.; American Sheet Steel Co.; American Steel Hoop Co. It has 66 lake vessels with docks at upper lake and lower lake ports. Its iron mines produced over 10,000,000 tons in 1900, and its blast furnaces have a capacity of 6,500,000 tons a year, or nearly half the pig iron production of the United States in 1900. Its employees number between 130,000 and 140,000 or as many as are employed by three of the great trunk lines of the country.

THEY are shoving so many sticks into the hulls of the large fore and aft schooners that a fellow will soon be able to heave the log by noting the change of bearing the spars indicate while the schooner is passing a stationary object.

DEFECTS AND ERRORS OF ASTRONOMICAL METHODS FOR FINDING THE POSITION OF A VESSEL AT SEA.

[COMMUNICATED]

People have been building ships costing hundreds of millions of dollars, but have never had a single dollar to spare for the improvement of nautical methods, to insure their safety at sea and keep them from stranding. According to Lloyd's Register, the total loss of the mercantile marine of the world from all causes during the fourth quarter of last year, was 414 vessels; out of which 204 vessels were lost by stranding, or nearly 50 per cent; the loss by stranding being nearly as great as the loss from over half a dozen other causes combined. The 204 vessels had a tonnage of 126,118 tons, which, at \$50 per ton, represent a pecuniary loss of \$6,305,900 in three months, or about \$25,000,000 per year. The number of lives lost in these disasters surely counting by the thousands.

The preceding figures speak for themselves; they are incontrovertible evidence of the rottenness of the methods in use for finding the position of a vessel at sea, and should set men to thinking.

In navigation, an error in position means danger, and is equivalent to having lost track of the vessel, and all power to shape courses so as to avoid dangers and prevent stranding. Stranding is always due to an error in position, (stress of weather excepted), caused either by errors in the corrections of courses, or an error in the last known point of departure. At sea the points of departure change continually, and are ascertained from astronomical observations, by means of certain methods and formulæ for finding latitude and longitude; and if these methods and formulæ are defective and lack precision, the points of departure, and the place the ship is in, will always be in error.

The methods in use are fairly teeming with errors, which is the cause of the enormous loss by stranding. The principal methods for finding latitude and longitude at sea, the pride of academies, universities, nautical schools, and boards of examination, are:

1. Latitude by the meridian altitude of a heavenly body.
2. Latitude by equal altitudes of the sun.
3. Latitude by an altitude of the sun near the meridian.
4. Latitude by Douve's method.
5. Latitude by five arcs method.
6. Latitude by Sumner's method.
7. Latitude by lines of position.
8. Latitude by the Pole star.
9. Time by the altitude of a heavenly body, or longitude by chronometer.
10. Longitude by lunar distances.

Methods 4, 5, 6 and 7 are based upon double altitudes of the sun.

The defects and errors of the methods enumerated are briefly as follows:

Method 1. Meridian altitudes are not obtainable at sea, because of the continual change of the ship's position and the change of the declination of the observed object; there being no means of ascertaining the meridian or the meridian passage of the object. All that is obtainable is the greatest altitude in a series of observations, which altitude is affected by the changes mentioned before, and is not a meridian altitude, but an ex-meridian altitude the hour angle of which has to be taken into account for obtaining the latitude. The methods in use neglect this hour angle and the reduction to the meridian, and consequently the latitude by so-called meridian altitudes is always in error. The error increases as the meridian zenith distances increase, and as the square of the vessel's relative speed North or South, plus or minus the change of the declination. For instance, the declination of the moon be zero, its change per hour 16 min. the speed of the vessel 24 knots per hour North or South and the changes of position and of the declination are in opposite directions, the error in latitude at 40° of latitude = 2 85 min.; at 60° = 5 88 min.; at 80° = 19.26 min.

The defects of method 2 consists in ignoring the change of position and the change of the declination during the interval between observations, causing an error in the reduction of the observed altitude to the meridian, and consequently, an error in latitude. The error is largest on easterly and westerly courses, and increases as the latitude decreases, and at the equator reaches infinity.

In method 3 the hour angle for computing the reduction to the meridian depends on previous or subsequent observations for time, and on the change of longitude in the inter-

val. As to find time requires a knowledge of the correct latitude, and to find latitude requires a knowledge of the correct time, the reckoning by this method moves always in a circle, and never yields correct results. The error on latitude on account of an error in the hour angle, increases as the hour angle increases, and as the latitude decreases.

Methods 4 and 5 neglects the change of the declination during the interval between observations, and the error in latitude increases as this change increases, and sometimes nearly equals it. The change in the declination of the sun is sometimes one minute per hour, and, if the interval be 6 hours, the error in latitude may reach 6 minutes, for 8 hours 8 minutes, etc. These two methods are only fit for stars with the interval expressed in sidereal time, but they are not used that way.

Method 6 is defective, because the chords of curves are substituted for the curves. The error in latitude on this account is sometimes very large, up to infinity, especially with one of the altitudes near the meridian, and increases as the product of the differences between the assumed latitudes and the true latitude. Satisfactory results are obtainable only within very narrow limits (20 minutes) of the true latitude and with altitudes not less than 45 degrees in azimuth from the meridian, and latitude differing not much from 45 degrees.

Method 7 is defective, because of tangents being substituted for curves. The errors in latitude follow closely the same law as the errors by method 6, the only difference being that the errors increase as the square of the difference between the assumed and true latitude.

Method 8 is only of use in the Northern Hemisphere, and the latitude derived by it is not under all circumstances reliable when ship's time is not exactly known. The change in the correction of altitudes is sometimes from 20' to 24' per hour; therefore an error of but 10 minutes in time may cause an error of 4 minutes in latitude.

Method 9 is mathematically correct, but as the result depends on the latitude, an error in latitude causes an error in time, and consequently, also in longitude; and as the correct latitude can not be found by any of the methods in use, the longitude by chronometer is frequently in error.

Method 10 surpasses all preceding methods in being a fraud and delusion, on account of the impossibility of measuring lunar distances at sea.

For further particulars in this line see the MARINE RECORD of April 19, May 17, Nov. 8 and 29, 1900, and Jan. 10 last.

As latitude is the basis for finding azimuths, an error in latitude affects the correction of compass courses for variation and deviation, and consequently again contributes to errors in position.

From the preceding, it is evident that the great number of strandings is the natural consequence of the numerous defects of the methods in use, defects due to mathematical blunders. Ignorance, parsimony, and an utter disregard for the safety of life and property at sea, have retarded the correction of these blunders for more than a century, and so the inaccuracies of the methods in use have wrought incalculable injury to shipping.

Chicago, Feb. 1901.

JOHN MAURICE.

Civil Engineer and Nautical Expert.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Buffalo	2,487,000	13,000	35,000	40,000	670,000
" afloat	1,014,000		162,000		
Chicago	11,339,000	3,775,000	3,099,000	552,000	265,000
" afloat	57,000	1,847,000	1,204,000		
Detroit	451,000	551,000	4,000	46,000	25,000
Duluth	7,504,000	3,881,000	985,000	299,000	75,000
Fort William, Ont.	1,470,000				26,000
Milwaukee	1,031,000	689,000	734,000	2,000	72,000
" afloat			322,000		
Montreal	95,000	12,000	145,000	9,000	49,000
Port Arthur, Ont.	250,000				
Toledo	574,000	2,009,000	306,000	4,000	
Toronto	80,000		2,000		10,000
Grand Total	57,536,000	18,218,000	10,567,000	1,156,000	1,650,000
Corresponding Date, 1899	53,445,000	16,333,000	5,755,000	1,152,000	1,341,000
Increase		1,157,000	265,000		
Decrease	145,000			18,000	19,000

While the stock of grain at lake ports only is here given the total shows the figures for the entire country except the Pacific Slope.

THE TWO OLDEST NAVAL OFFICERS.

The recent death of Capt. Francis Martin, of the United States Revenue Cutter Marine Service, who was drawing salary at the time of his death, and who, no doubt, was the only man who ever did draw one after he was 100 years old, attracts, says the Philadelphia Press, attention to another interesting mariner. This is Rear Admiral Thomas O. Selfridge. He has been on the retired list ever since 1866. Born in 1804, he was appointed a midshipman fourteen years later and is thus, in all probability, the only American now living who took part—if one may use that phrase—in the official sorrow expressed—under orders—by the United State Navy when George III died in 1820. Capt. Martin drew a salary for only sixty-nine years, having been appointed by President Jackson, to the Revenue Cutter Service in 1832, but Admiral Selfridge's record of eighty-three years on the navy payrolls will, even were he to die to-day, no doubt stand unequaled for many years to come.

TO CONTROL THE LEVEL OF LAKE ERIE.

In reply to a question asked in the Dominion parliament a day or two ago whether a proposition had been received from the Washington government to raise the waters of Lake Erie, by dams or otherwise, the minister of marine and fisheries stated that no proposal of the kind had been made by the United States to raise the Lake Erie waters, to compensate for the lowering of the upper lake waters caused by the Chicago drainage canal.

The minister of public works, Mr. Tarte, however, added that there was some correspondence upon this subject on file in his department, but offered nothing in the form of a definite proposition. It is understood, nevertheless, that the Canadian government is prepared to give immediate consideration to any reasonable proposal that may come from the United States authorities upon the question.

EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report the condition of the eastern freight market as follows:

There has been a larger volume of business transacted in grain charters during the past week. A part of the tonnage chartered has been taken to replace steamers originally fixed which have missed their dates, whilst a few new trades have also been consummated, principally handy sizes to Cork f. o. There is little or no demand for steamers on berth terms basis, the rates by the regular liners being much below what out side tonnage is willing to accept. In all other directions the market for steam tonnage remains practically unchanged and the supply of available boats seems to be quite sufficient to meet the limited existing demand.

As regards sail tonnage the market in brief can be termed quiet and firm. The continued scarcity of deep water vessels is still a sustaining feature of the situation, but we fail to learn of any urgent orders in hand.

LAKE ST. CLAIR-ERIE CANAL.

"We have given up hope of getting any aid from the Ottawa Government this season, but we are trying to carry through the St. Clair river and Erie ship canal by private enterprise," said the Hon. D. Tisdale, M. P., for Norfolk.

He is further quoted as saying:

"We are trying to get English and American capitalists interested, with good hopes of success, as the undertaking is both feasible and economical. It would save 75 miles each way or 150 miles the round trip, and would avoid the dangers of navigation at the entrance to Detroit river. The government is apathetic about the matter, and there are not enough constituencies interested to bring pressure to bear, although it would be a benefit to every vesselman on the lakes."

ANOTHER MARINE ORGANIZATION.

The National Masters' and Mates' Association of Canada was organized last week in Toronto. About 75 were present, many in attendance being from outside places, including Capt. William Ireland of the steamer North Star of Parry Sound; Capt. Wilson, Collingwood; Capt. Robert Cooney, St. Catharines; Capt. Sullivan, St. Catharines.

The following officers were elected: President Capt. James McSherry; 1st vice president, Capt. Jennings; 2nd vice president, Capt. Phillips; secretary, John D. Murphy, 1 Church St., Toronto; treasurer, Capt. Tufford; conductor, Capt. Alex. Martin; tyler, Capt. Henry McSherry; auditors, Capt. G. Molton, Capt. Frank Jackman.

METEOROLOGICAL CHART OF THE LAKES.

We have just received a copy of the meteorological chart of the Great Lakes, from the U. S. Department of Agriculture, with a summary for the season of 1900. The contents include the following: Opening and Closing of Navigation, 1900; The Storms of the Year; Storm Warning Towers; Atmospheric Precipitation and Lake Levels; Fog During the Season of 1900; Fog Details November 16 to December 15, 1900; Ice During Winter of 1899-1900; Wrecks and Casualties during 1900; Loss of Vessels Due to Causes Other than the Weather, by Alfred J. Henry and Norman B. Conger; prepared under the direction of Willis L. Moore, Chief U. S. Weather Bureau.

ATMOSPHERIC PRECIPITATION AND LAKE LEVELS.

A study of the precipitation in the lake region during 1900, in connection with the rise and fall of the lake waters, has developed some interesting and important features.

The winter precipitation was deficient in the upper lake region, especially in the watersheds of Lakes Superior and Huron. The snowfall on the average for these lakes, including land areas tributary thereto, was about a foot and a quarter less than during the preceding winter. The spring and early summer rains likewise fell short of the normal, by small amounts it is true, yet the accumulated deficiency in the Superior basin from November 1, 1899, to June 30, 1900, was about five and a half inches. The computed evaporation for the same period at Duluth was 15.5 inches as against 12.4 for the corresponding period of the preceding year; Marquette, 13.5 inches as against 10.9 for the preceding year; Sault Ste. Marie, 13.0, as against 9.0 for the preceding year.

The mean level of Lake Superior for November, 1899, was 602.68 feet above mean tide at New York City, the highest mean level for that month reached since the high water of 1876.

The levels of the lake fell continuously until May, when a rise of 0.17 foot, about half the normal rise for that month was noted. The normal rise, May to June, is 0.30 feet; the actual rise was 0.06 feet. Precipitation was continuously below normal from January to June, both inclusive, but beginning with July and continuing through August and September, heavy rains fell in the Superior watershed, the accumulated excess for the three months being 5.50 inches. The computed evaporation during the same months was about the same as for the corresponding period a year ago. Assuming that the discharge through the St. Mary's river was normal, the excess of rain that fell on the water surface of the lake above evaporation must have caused the marked increase in level shown in the table over and above the normal increase, July to October. The normal rise of the latter period is but 0.07 foot. The actual increase was 0.96 foot. Deducting the normal increase there still remains a rise in the level of the lake of about eleven inches from July to October. It is difficult to attribute this rise to any other agency than the actual precipitation on the lake surface.

The oscillations in Lakes Michigan and Huron follow in general those of Lake Superior.

During the period of deficient precipitation, January to June, 1900, the level of both Lakes Michigan and Huron fell below the level of the previous year, but owing to the heavy rains in the Superior region, July to September, inclusive, there was not the usual fall in September, October, and November. Both lakes were at a higher stage during December, 1900, than for the same month in many years.

So far as can be judged by the data at hand, the opening of the Chicago drainage canal has not had an appreciable effect on the level of Lake Michigan.

FOG DURING THE SEASON OF 1900.

During the season of navigation from April 18, 1900, to December 19, 1900, there were received 2,450 reports of the prevalence of fog on the Great Lakes. The numerous reports from the vessel masters have been very promptly rendered, and in consequence there is a much better record of the fog conditions this year than in any year since the investigation was begun. The largest number received in any one month was 885, covering the period from May 15 to June 15. Sufficient data have been received to make a preliminary series of charts showing the average number of days for each lake on which fog has prevailed. These charts are very interesting, as they outline the fog-belts of the several lakes and indicate clearly the months during which the most fog may be anticipated on the lakes. A careful study of the charts will be of value to all vessel masters.

In the investigation of the fog conditions on the Great Lakes, there has been found one factor which has proved very difficult to handle, and that is the width of the fog bank or belt. It has been possible to state how long the belt is, from the many reports of masters traveling the same district during nearly the same hours, but these reports do not indicate how wide the belt is, so that it would be possible to lay down the course of the vessel to the right of the belt or left of it so as to be in clear weather instead of fog. This important feature can only be established by a very systematic report from vessel masters, which it is not possible to obtain at the present time.

In closing this report the thanks of the Weather Bureau are extended to the many vessel masters who have so faithfully rendered fog reports during the season. With these reports it has been possible to lay before them the most complete fog report which has as yet been prepared.

The results of the three years observations are of sufficient value to continue the observations for another season; in this the united support of every master is desired.

WRECKS AND CASUALTIES DURING 1900.

The season of navigation for 1900 will pass into history with a record of 37 total losses from weather conditions and 12 from other causes. There were 91 vessels which received partial damages from weather conditions, 41 of which were due directly to fog. The total amount of damages from weather conditions or fog was \$555,175, of which amount \$351,575 was in total loss, and \$203,600 in partial loss. Fog was responsible for damages amounting to \$103,150. There were 92 lives lost due to navigation, of which number 51 were due to weather conditions and 41 to other causes.

As usual, Lake Erie contributes the greatest amount of loss, the amount being \$288,700, or 52 per cent. of the entire total. Lake Huron is next in amount. The loss by months is as follows: April, \$31,400; May, \$64,700; June, \$12,650; July, \$20,450; August, there was no loss attributed directly to weather conditions during the month, but several total losses occurred with loss of life in the St. Clair and Detroit rivers; September, \$183,725; October, \$26,500; November, \$194,250; December, \$22,500; grand total, \$555,175.

The number of lives lost on Lake Superior from stormy weather was 5, other causes, 17; on Lake Michigan, weather, 1, other causes, 7; on Lake Huron, weather, none, other causes, none; on Lake Erie, weather, 36, other causes, 6; on Lake Ontario, weather, 6, other causes, none; on Lake St. Clair and connecting rivers, weather, 3, other causes, 11; total for weather, 51, other causes, 41.

The fall period was notable for several very heavy storms, but the total loss from these storms was comparatively small; more vessels were reported in shelter during the storm periods than have been reported in any season of the past. The greatest loss of life was caused by the foundering of the steamer John B. Lyons on September 12, when 11 lives were lost, on Lake Erie; the next serious loss occurred on November 24, when 8 lives were lost with the schooner Maumee Valley, and on December 9, when 8 lives were lost with the schooner Charles Foster.

The usual tables follow giving the losses by lakes, the amount due to fog conditions, and the report in detail and location of each disaster. These losses are reported as due to weather conditions only, and at the close of the report is a list of vessels which have become total losses from other causes than weather conditions.

The canal locks at Sault Ste. Marie were opened for the season of navigation on April 22, when the steamer M. A. Hanna passed up, and were closed on December 12, when the steamers Maritana and Mariska passed down; there was some 6 inches of ice reported in Mud Lake, which made the passage to Lake Huron somewhat difficult. At Mackinaw the steamer Jesse Spaulding, on April 18, passed from Lake Michigan to Lake Huron, being the first passage for the season, and the last was the steamer George Stone, with coal for Milwaukee, on December 18. The last passage up through the Detroit River was the steamer Baltic and Vail, on December 17, and the last down was the steamers City of Cleveland and Schuck, which passed down on December 19. The steamer M. T. Green with schooner S. A. Wood in tow, with the assistance of the tug Protector, forced a passage through 6-inch ice in Lake St. Clair on the 17th, and the Wood was leaking some from ice damage; the fleet was bound for Cleveland with alabaster.

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—OHIO.

TREASURY DEPARTMENT,
OFFICE OF THE LIGHT-HOUSE BOARD,
WASHINGTON, D. C., February 23, 1901.

GREEN ISLAND LIGHT STATION.—Notice is hereby given that on the opening of navigation, 1901, the characteristic of the light at this station will be changed from fixed white varied by a red flash every minute to flashing alternately red and white, interval between flashes 30 seconds.

The station is located on the westerly end of Green Island 1 mile westerly of South Bass Island, westerly part of Lake Erie.

DUNKIRK LIGHT STATION.—Notice is hereby given that on the opening of navigation, 1901, the characteristics of the light at this station will be changed by reducing the interval between flashes from 90 to 45 seconds. The characteristic of the light will then be: Fixed white varied by a white flash every 45 seconds.

On the same date the round portion of the tower above the main gallery, and supporting the lantern will be painted white.

The station is located on Port Gratiot, 2,220 feet ($1\frac{1}{2}$ mile) to westward of Dunkirk Harbor entrance, southerly shore of Lake Erie.

By order of the Light House Board:

FRANCIS J. HIGGINSON,
Rear Admiral, U. S. Navy, Chairman.

A special from Montreal, states that: F. H. Clergue, the organizer and director of the milling and paper industries at Sault Ste. Marie, will soon take over the entire undertaking of the Connors elevator syndicate, and conduct the elevators and warehouses at Montreal which the syndicate had guaranteed to provide. Connors had contracted with the harbor commission to spend \$3,000,000 in building two elevators with the idea of diverting a portion at least of the export grain trade from Buffalo to Montreal.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Finding on Marine Policy.—In an action on a marine policy, excepting the insurers from all risks for losses arising from the gross negligence of the owner, officers, or crew of the vessel, a jury's finding that the loss was not occasioned by such negligence is conclusive. *Jones et al. vs. Western Assurance Co., of Toronto, 47 At. Rep. (Pa.) 948.*

Failure to Observe Rules—Presumption of Fault.—Under the decision of both English and American courts, where a vessel has disregarded a rule of navigation, it is incumbent on her to show, in case of collision, that the violation of the statute not only did not contribute to the collision, but could not have done so. *The Lansdowne, 105 Fed. Rep. (U. S.) 436.*

Repairs by Insurer.—In an action on a marine policy, the insurer cannot complain of an instruction that if the boat was repaired so as to be as good as it was before the accident, and was tendered by the insurer to the assured, and he refused to accept it, he was not entitled to recover. *Jones et al. vs. Western Assurance Co., of Toronto, 47 At. Rep. (Pa.) 948.*

Total Loss Under Marine Policy.—Where a marine insurance policy stipulates that, when the injury sustained is equal to 50 per centum of the value of the vessel, a total loss shall exist justifying abandonment, and the cost of repairing exceeded one half its value, the assured is justified in abandoning it, and suing for the full amount of the policy. *Jones et al. vs. Western Assurance Co., of Toronto, 47 At. Rep. (Pa.) 948.*

Shipping.—In the absence of any evidence tending to prove that it is the part of the business habit or custom of the defendant, a common carrier of passengers on water, to receive telegrams for delivery, to its passengers or that it knew or permitted this to be done by its officers, servants, or agents, the defendant is not liable for the non-delivery of a telegram addressed to a passenger on board its steamer, and by direction of the captain accepted by the purser for delivery. *Davies vs. Eastern Steamboat Co., 47 At. Rep. (Me.) 896.*

Contributory Fault.—The other vessel was not guilty of contributory fault in passing up within 600 or 700 feet of the shore, it appears that she was seen by the ferryboat when half a mile distant, nor in failing to sooner signal under the circumstances shown, nor because, when a few lengths distant, she signaled her intention to pass to port, which was contrary to the rules when a vessel was approaching her starboard hand; since she was justified in the supposition that the object seen nearly ahead was stationary. *The Lansdowne, 105 Fed. Rep. (U. S.) 436.*

Marine Insurance.—When a marine policy requires that when the injury sustained is equal to 50 per centum of the value of the vessel, a total loss shall exist justifying abandonment, in an action to recover for loss of a vessel by sinking, error in an instruction, in including the expense of raising the vessel in the 50 per centum of its value required to make the total loss, is cured by a further instruction that the vessel could not be abandoned unless the cost of repairing exceeded one-half the value of the boat, *Jones et al. vs. Western Assurance Co., of Toronto, 47 At. Rep. (Pa.) 948.*

Collision—Absence of Lights—Weight of Evidence.—In a suit for collision in the nighttime, where the officer on watch on one of the vessels and her lookout testify that no colored side lights were visible on the other vessel, until immediately before the collision, to indicate that she was in motion, or her course, and there is nothing to indicate negligence on their part, and the management of their vessel was consistent with such facts, but directly contrary to the navigation rules and the practice of good seamanship if such lights were seen, their testimony is entitled to greater weight than that of casual observers who had no interest in the matter. *The Lansdowne, 105 Fed. Rep. (U. S.) 436.*

Steamboat Crossing—Evidence Considered.—A collision which occurred in the night-time on the Canadian side of the Detroit river between a steam ferryboat on her way down from Windsor to Detroit and a steamer passing up the river, held to have been due solely to the fault of the ferryboat in failing to comply with the Canadian navigation rules as to the position and character of her bright lights, or to signal when within sight of the other vessel, as required by such rules, and chiefly in failing to display her red port light until immediately before the collision. She was a double-ended vessel, and carried two sets of colored lights, which closed by metal screens; the custom being, when leaving her slip, for the watchman to close the lights on the end which was, for the time being, the stern, and open the others. The weight of evidence tended to show that on this occasion the port light was either not opened until the vessels were near together, or that it was only partially opened, so that it could be seen but a short distance; in consequence of which, in connection with her failure to signal, and the numerous lights in the city behind her, the officers and the lookout of the other vessel were unable to make her out until near, and then supposed her to be stationary, until too late to avoid the collision. *The Lansdowne, 105 Fed. Rep. (U. S.) 436.*



ESTABLISHED 1878.

Published Every Thursday by

THE MARINE RECORD PUBLISHING CO.,

Incorporated.

C. E. RUSKIN,
CAPT. JOHN SWAINSON,Manager
Editor.CLEVELAND,
Western Reserve Building.CHICAGO,
Royal Insurance Building.

SUBSCRIPTION.

One Copy, one year, postage paid, - - - \$2.00
 One Copy, one year, to foreign countries, - - - \$3.00
 Invariably in advance.

ADVERTISING.

Rates given on application.

All communications should be addressed to the Cleveland office,
 THE MARINE RECORD PUBLISHING CO.,
 Western Reserve Building, Cleveland, O.

Entered at Cleveland Postoffice as second-class mail matter.

No attention is paid to anonymous communications, but the wishes
 of contributors as to the use of their names will be scrupulously
 regarded.

CLEVELAND, O., FEBRUARY 28, 1901.

The Cramp-Vickers-Maxim consolidation is positively
 denied by Mr. Charles H. Cramp.

THE thanks of the MARINE RECORD are due to the Chief of
 the Weather Bureau, Prof. Willis L. Moore, for a copy of the
 meteorological chart of the Great Lakes with summary for
 the season of 1900, compiled by Alfred J. Henry, Washington,
 and Norman B. Conger, Detroit.

"PILOT versus Engineer," contained in this issue of the
 RECORD, is a very interesting decision, particularly at this
 time. Unionism, as it relates to labor and capital, or to
 billion dollars syndicates, is here and here to stay, and the
 question of clashing interests must be threshed out as
 circumstances demand.

THERE is quite a little scribbling and figuring to be done
 on each trip of a large cargo steamer. Government depart-
 ments want much and owners more. This feature is increas-
 ing each season so that in the near future it is possible
 that clerkly help will be required to keep an accurate,
 ship shape tab on both ends of a boat. This would be a
 nice yard arm billet for junior clerks learning the shipping
 business.

Is the time opportune for a federation of employes in
 service on the lakes, and, if so, should the officers be asked
 to join it? Relative to the insurance part of it, the majority
 of masters, mates, pilots and engineers are already covered
 in their own associations, besides, is it not somewhat infra dig.
 to federate, or in a measure unionize in such a holus bolus
 fashion? We hope everything for the best and like to see
 things right.

THERE is just a possibility that in the near future it may
 develop that we have too much governmental interference
 with the ordinary methods of carrying on lake commerce.
 Over and above the annual changes found necessary to
 facilitate and advance the best interests of lake transpor-
 tation, there are numerous others, suggested, petitioned and
 legislated for. The various associations, (prominent among
 which are the Lake Carriers, Shipmasters, Marine Engi-
 neers, Masters and Pilots, Tugmen, etc.,) seem to desire
 further legislative enactments at each session of Congress,
 or, and, at the annual meetings of the Board of Supervising
 Inspector, of Steamboats. The issue to guard against is
 not to strain every nerve to put a rod in pickle to chastise
 ourselves. Any desired congressional action should be well
 considered from the various, and all standpoints, before
 being pressed to a compulsory finale. We simply mention
 the foregoing feature so as to produce a second thought on
 new departures now being contemplated.

In charge of a first-class pilot and lost with upwards of
 100 lives at the entrance to 'Frisco Bay, marked the last of an
 old Pacific line steamer a few days ago, cause, master's error
 of judgment, culpability, individual. The case has been
 sat upon, and editorial decisions signed, sealed and delivered
 by the bushel. This, from the Detroit Journal, is a calker:

"The laws governing pilotage make the pilot supreme from
 the moment his foot touches the deck of the vessel with
 the safe conduct of which he is charged. His authority
 reaches over every man on board, from captain to cabin
 flunkey. If he relaxes or relinquishes that authority he does
 it of his own volition and in contravention of the spirit of
 the laws which govern his calling. When Jordan permitted
 Capt. Ward to take away from him the command of the
 Rio de Janeiro, he shirked, and the penalty of his offense
 is told in the long array of names under the caption of
 "lost or missing." * * * There are cases known in
 which a pilot has used a handspike to quiet a mutinous
 skipper; but it does not appear that Jordan is made of that
 kind of stuff."

Reading this editorial in the Detroit Journal compels our
 attention, elsewhere, it would perhaps have been unnoticed.
 With all due courtesy to the writer of the foregoing editorial
 excerpt, we would suggest that at some future time he might
 devote a little leisure towards learning the duties of masters
 and pilots and the relation that they invariably and univer-
 sally bear toward each other. Let it be clearly and decis-
 ively understood that the master is in sole command of a
 vessel as long as she remains such and is in responsible
 charge of the last vestige connected with her. There is no
 pleading the baby act for a man holding such a position, he
 can not say that his wife, steward, crew, officers, engineers
 or pilot exercised a mental or any other influence over his
 well balanced action, however disastrous it may turn out.
 To dismiss the subject at this time, let us say, that, according
 to the writer in the Detroit Journal, the engineer was perhaps
 more culpable than the pilot, for it was the propeller that put
 her where she fetched up.

WHERE do we go when we want to ship is an inquiry not
 unfrequently heard from those wishing to start sailing on
 the lakes. The reply might be, well, hang around any
 old place, or, as it used to be, you must first "join the union,"
 however, the butcher, the baker and candle-stick maker like
 birds of a feather, etc. Cooks and stewards who are
 acquainted can haunt provision and supply stores and make
 shipping agents of their delivery clerks, if there is a transfer
 made the grocer secures a patron; mates, pilots and wheels-
 men find crumbs of information to be picked up around
 shipchandlery stores, from bridge tenders, former shipmates,
 etc. etc.; engineers and masters, especially the latter, are
 knocked out worse than all if they make a couple of changes
 during the season, still, an engineer supply store ought to
 be able to supply a few engineers at any time day or night,
 and masters have many avenues to learn of present or in-
 tended changes, transfers and vacancies, but they detest
 hanging around the offices of shipowners.

ADMITTING that the article contained in this issue of the
 RECORD, communicated by Mr. John Maurice, Chicago, is
 eminently correct in each point brought to the attention of our
 readers, is it not almost miraculous, that such splendid pas-
 sages, and exact landfalls, are hourly made the world over.
 Absolute accuracy is an impossibility in practical naviga-
 tion, this we think is an accepted truism, yet, how marvel-
 ously near do we come to it. It may be, that the lack of
 applying certain corrections on the one hand, is offset, or
 counteracted by the stated power or quantities working to a
 great extent in an opposite direction, and also not applied,
 hence, permitting a reliable mean to be arrived at, or suffi-
 ciently so for practical, if not scientific purposes. The fact
 remains, however, that the seas are being singularly accurately
 "herring boned" even by the ordinary navigator engaged
 in the mercantile marine service of the various maritime na-
 tions and particularly so under the German and British
 flags.

As a clincher, and as showing his faith in the ordinary
 methods of navigation, the sentiment of the old time "flat
 foot" might be conveyed in the following language: "Pitch
 me in the broad and glorious South Pacific, give me but a
 square and compass, and I'll come up within the circle of a
 wash deck tub." Such sublime simplicity is charming,
 and this too in the days of 89° 48'. Hair raising stories
 are also told of galloping across the Western Ocean without
 ever getting a sight of the sun, and then making the best
 kind of a landfall. Oh if they could only come back to
 teach us a few of their wrinkles?

WHAT'S the use of bristling away thousands upon thou-
 sands of dollars annually for the up-keep of private shipping
 offices at lake ports when the Treasury Department stands,
 as it has stood for years, ready to shoulder this large item of
 expense. Everywhere where civilization trends there are state-
 supported labor bureaus or employment offices. National re-
 cruiting and shipping offices for the army and navy and at
 all sea ports of any note, a shipping office is established
 under the jurisdiction of the Commissioner of Navigation,
 Bureau of Navigation, Treasury Department. Not to
 mince matters in the least, we can but say in this connec-
 tion, that the lakes are duly entitled to an easy half dozen
 shipping offices, the same to be supported as usual and cus-
 tomary by the Federal government.

THE LAKE FISHERIES—WASHINGTON
COMMISSIONER.

There has for some time past been an impression in
 interested circles that all has not yet been done for the pre-
 servation and propagation of the various species of fish
 found in the waters of the lakes. In this connection Mr. W.
 D. Tomson of Duluth, in a recent interview published in
 the News Tribune had the following to say:

"It seems but a short time since white fish were caught
 in sight of the smoke of Duluth's tall chimneys, and there
 are numbers of us older residents who can, without any great
 stretch of memory, recall Sucker point and Agate bay, at
 Two Harbors, and the boat loads of these big fellows that
 were brought in and prepared for market at these fishing
 stations. But Duluth grew. The sewage began to drift out-
 ward and the nets of the commercial fishermen had to follow
 the outgoing fish. Soon the cry came that both white fish
 and lake trout were getting scarcer. Efforts were made to
 restock the Great Lakes and millions of young fry were
 planted contiguous to the port of Duluth. The fishermen
 realizing that artificial propagation of the decreasing fish
 must be resorted to, organized the Fisheries Association and
 established a hatching station near this city. Millions of
 young fry have yearly been turned into the waters of Lake
 Superior.

"In 1897, at the annual meeting of the association, it was
 reported that white fish netting was very poor. This was
 reported the United States fish commissioner at Washington.
 In 1899 the Michigan fish commission attempted to enforce a
 close season law on white fish and lake trout, and efforts were
 made to secure the nets of the Duluth fishermen. Later the
 Michigan legislature tried to drive Duluth fishermen from
 Isle Royale by demanding a tax on fishing boats and also
 another, which was regulated by the amount of net carried.
 However, the proposition did not succeed. "A year ago,"
 continued Mr. Tomlin, "it was reported that the system of
 planting by dumping them into the wake of a fast moving
 steamer resulted in many of the fish dying immediately.
 Efforts were made to secure a tug for the purpose, although
 nothing, however, was done by the United States com-
 mission.

"The system is wrong, and out of hundreds of thousands
 of dollars spent, there is little to show for it.

"The state of Wisconsin has a fish commission operated
 on a business basis and it has done good work. Some years
 ago Mr. Nervins, a member of the commission, secured an
 immense amount of spawn of what was known as 'island
 white fish.' They came out splendid—about 90 per cent.
 of them hatched and grew strong. That is why today you
 can catch blue fins in Lake Superior by the ton.

"The methods employed by the Wisconsin authorities
 have been a success. They use a large tug and the boat
 simply moves along slowly when the fish are dropped into
 the water, which is shallow enough to allow them to find
 food as soon as the sac is absorbed. The system of the
 United States commission, particularly when compared to
 that used by Wisconsin, is, as I said before, radically wrong.
 There has been expended about \$150,000, and as the com-
 mission follows obsolete methods, no good results have
 been obtained.

"It is now proposed to introduce the matter in the United
 States Senate. The commissioner accepts no recommenda-
 tions or suggestions—he decides, his word is law and he ig-
 nores statements coming from fishermen. Each commis-
 sioner for some years has received complaints from men
 who have studied the situation, but they have been of no
 avail. The white fish and lake trout are apparently going
 the way of the Buffalo—they are relics of the past.

"It is the same on the lower lakes, where much money is
 expended right along, but nothing is received in return.

"The question of the capital employed in the commercial
 fisheries is too large a matter to be considered here, but
 in Lake Superior alone it runs up to hundreds of thousands
 of dollars. Had the money been invested in any other
 channel, that would have become a public matter and Con-
 gress would have done something before now.

"However, it is only a question, as already an inter-state
 protective association is being talked of. The distribution
 of state funds to replenish have not been used in proportion
 to the immense capital floated to secure a healthful and de-
 licious fish food. In some parts of the world an acre of
 water is made to produce as much as an acre of land, and
 when our great chain of lakes, outpouring at Niagara, shall
 produce an item of this quantity, then the United States
 Senate will not be solicited to take up for consideration 'the
 returns on the expenditures on the Great Lakes looking to
 the replenishing of fish-food for one-half of the continent.
 Has it been a success?'"

AN ENLARGED ERIE CANAL.

A system of state canals, the boats to be moved by electricity and to be 150 feet long, by 25 feet wide, with a draft of ten feet, and to travel in fleets going from Albany to Buffalo in less than three days, is the plan presented by State Engineer Bond and a board of engineers to Gov. O'Dell, of New York. The system is to be built for \$7,000,000 less than the amount proposed by the canal commission appointed by Gov. Roosevelt. The canals will be able to carry 15,000,000 tons of freight during a season of several months. The figures submitted are:

For building an Erie barge canal on the route favored by State Engineer Bond, \$49,000,000; for deepening the Oswego canal to nine feet, \$859,026; for deepening the Champlain canal to six feet, \$5,472,000; total cost of canal improvements, \$55,331,026.

These figures are surprising because it has been intimated that the figures of the canal commission of \$62,000,000 would be far exceeded when a careful survey was made.

The report submitted by Mr. Bond is endorsed as to cost so far as it relates to the proposed canal bill, by George S. Greene, of New York City; George W. Wisner, of Detroit, Mich.; Edward P. North, New York City; Prof. Palmer C. Ely, Troy, N. Y.; J. C. Nelson Tubbs, Rochester, N. Y.; Elnathian Sweet, of Albany, N. Y.; T. C. Lentz, of Albany, N. Y., and David J. Howell, of Washington, D. C.

The state engineer in his report says:

"The estimate of \$49,000,000 is for a canal of size suitable for barges of 10 feet draft, 25 feet width and 150 feet length.

"The canal as planned and estimated for these routes is first class in every respect, with locks of the most modern type, capable of passing two boats at once with recent methods of filling and emptying the locks, with power generated to pull the boats into and out of the locks, operate the gates and valves and furnish electric light. In the river and lake channels the minimum width is 200 feet. A full complement of first class new bridges is provided wherever required."

In the navigation of the proposed canals, only steam, electric or other mechanical motors have been considered, consequently the towing path will be a thing of the past.

The large expenditure for water supply not contemplated by the canal committee, has also been provided for in the estimate. This question of water supply is a very important one, and in making the plans provision is made for safety and surety, and at all times in the driest season, passing ten million tons of freight a year, and at the same time fully conserving all existing water power.

As will be seen by the foregoing, the system embraces three canals of varying capacity and cost, namely: The Erie canal, from Buffalo to Albany, to accommodate boats 150 feet in length, 25 feet wide, 10 feet draft and 1,000 tons capacity, costing \$49,000,000; the Champlain canal 6 feet depth, costing \$5,472,000; and the Oswego canal, of 9 feet depth, costing \$859,026—a total of \$55,331,025.

A favorable feature of the report is that the cost of the proposed improvement entire will be nearly seven million dollars less than was estimated by Governor Roosevelt's Commission, or \$55,000,000 instead of \$62,000,000—an agreeable disappointment, the surmise being that the State Engineer's estimate would go considerably over rather than under the last named figure.

Interest now centers on Governor Odell's action, how he will view the report and what he will recommend in reference to it when he lays it before the Legislature.

H. G. Raymond, of Buffalo, secretary of the canal committee of the State Board of Trade has presented the claims of a modernized and enlarged canal to the seaboard in such a way that farmers in the country and business men in towns and cities may understand the real meaning of the proposed barge line.

Mr. Raymond presents arguments to show that the sudden development of the iron and steel trade of this country has placed the United States in advance of Great Britain in its production and exportation. "Competent authorities," says Mr. Raymond, "have decided that, based on the natural increasing demand in the last 20 years, at the end of the next decade the United States must produce twice as much iron and steel as she does today." Around the shores of the northern lakes lie ores the best in the world. The deposit is the largest and finest known on the world's surface today, and we are sending to foreign countries a vast amount over and above what is needed at home, and our necessities are great. In 1884 Great Britain produced about twice as much iron as the United States. In 1890 the United States

had forged slightly ahead, and in 1899 the pig iron production of the United States was equal to that of the United States in 1884 and that of Great Britain in 1899 added together.

The natural deduction from this statement of facts is that the Erie canal will be required to carry the vast amount of iron and steel required for the business of the country east of Buffalo, and will also be required to carry the increasing bulk of ores for foreign shipment at the port of New York. The advantage of using the Erie canal is that the ore would come to Buffalo by lake at the same rate as to Conneaut. It would there be put into 1000-ton barges and moved to any river point for 50 cents per ton or less. Allowing two tons of ore, as before, and we have the ore for a ton of pig laid down on the river for \$1.00 as a freight charge. It must be borne in mind that under present uses of coke for smelting, coke would cost less at Pittsburg than at the Hudson, but if we allow \$1.00 per ton on the manufactured iron, we will be making a safe allowance for this difference in expense. We then have the ore smelted at the Hudson at a cost of freight of \$1 per ton on the ore and a fuel differential of \$1 additional. In other words, you have a ton of iron made and delivered at tidewater for a total charge of \$2, as compared with a similar expense via Pittsburg of \$4.25 to \$5.56 per ton.

ADMIRAL HICHBORN, U. S. N. RETIRES.

The retirement of Rear Admiral Philip Hichborn, for eight years past chief constructor of the American navy,



ADMIRAL PHILIP HICHBORN, U. S. N.

marks the passage from public life of one of the ablest men in our history.

From a shipwright apprentice at the Boston navy yard he rose steadily through the various grades of the construction branch of the service until, in July 1893, he was appointed chief of the bureau of construction and repairs, the highest position in the construction corps.

In 1880, when Congress determined to reorganize the navy, Admiral Hichborn, then a naval constructor, was chosen to serve as a member of the first naval advisory board, and four years later was selected by Secretary Chandler to go abroad, in the capacity of naval expert, to investigate naval progress in Europe. He has been always a staunch advocate of sheathed ships, and, in the face of strong opposition, succeeded in having this type of vessel partially adopted into the navy.

Admiral Hichborn's design of ships and inventions of naval equipments are in evidence through the service, prominent among them being the barbettes turrets, commonly known as "Hichborn turrets," the Franklin life buoy, which is in use in this and nearly every European navy, submarine boats, water tube boilers, fire-proof wood, and ship's boats, which have been adopted as the standard. The admiral also has been foremost in the design and con-

struction of the battleships and cruisers of the "new navy" now being contracted for by shipbuilders throughout the country. Admiral Hichborn retires by age limit on March 4, but practically relinquished the important duties of his position a few weeks ago.

ASTRONOMICAL DATA FOR MARCH.

Astronomical data for March, 1901, furnished by the Washburn observatory.

Mercury passes through inferior conjunction March 7th, and then joins Venus as a morning star. Both planets will be near the sun, however; but Mercury will rise earlier each morning, and may possibly be seen the latter part of the month, while Venus will continue to draw nearer the sun and become less noticeable than it has been. The two conspicuous planets in the early morning are Jupiter and Saturn, which appear in the southeastern sky near together, the latter less brilliant and farther east and north. The only prominent planet in the evening is Mars, which appears as a brilliant, ruddy star high in the eastern sky and crosses the meridian somewhat south of the zenith in the latter part of the evening. The sun, in its apparent seasonal motion northward, crosses the line March 21st, 1 hr. 23 m. a. m.

The times of sunrise and sunset at Milwaukee for the month are as follows:

	SUNRISE.	SUNSET.
March 1.....	6:29.....	5:40.....
March 11.....	6:12.....	5:53.....
March 21.....	5:54.....	6:05.....
March 31.....	5:36.....	6:16.....

The times of the moon's phases are:

Full moon.....	March 5, 2:04 a. m.
Third quarter.....	March 13, 7:06 p. m.
New Moon.....	March 20, 6:53 a. m.
First quarter.....	March 26, 10:39 p. m.

The principal fixed stars visible during the month in the evening hours are:

To the west, Capella and Nova Persei (if the latter continues brilliant), Aldebaran, the Pleiades, Sirius and the bright stars of the constellation Orion. Near the meridian, Castor and Pollux and Procyon. To the east, Regulus.

TAXATION OF VESSEL PROPERTY.

James Davidson, the well-known shipbuilder of Bay City, has written a letter to Senator W. D. Kelley, at Lansing, commending the latter's bill for the taxation of vessel property.

"After looking over this bill," he writes, "I think that all of the wording and everything on it is all right, and will be satisfactory to vesselmen in the state of Michigan, and I would be glad to see such a bill put through the Michigan Legislature and become a law.

"We have been building a great many vessels in Bay City, for other people as well as ourselves, until we had quite a fleet of our own, consisting of 26 vessels, but the city and county taxes were so hard on us, and so hard on all the ship owners here, that it was impossible for them to hail their vessels from Bay City, so as Minnesota was one of the fairest and most economical states in the Union to hail vessels from, we formed a company in accordance with the laws of the state of Minnesota and hail our vessels from Duluth.

"We also pay the same taxes that you have made in your bill, viz: Three cents per ton, which we consider is a very reasonable assessment.

"The state of Minnesota has been able to get about one-half of all the tonnage on the lakes enrolled in that state, and has thereby received a tremendous revenue.

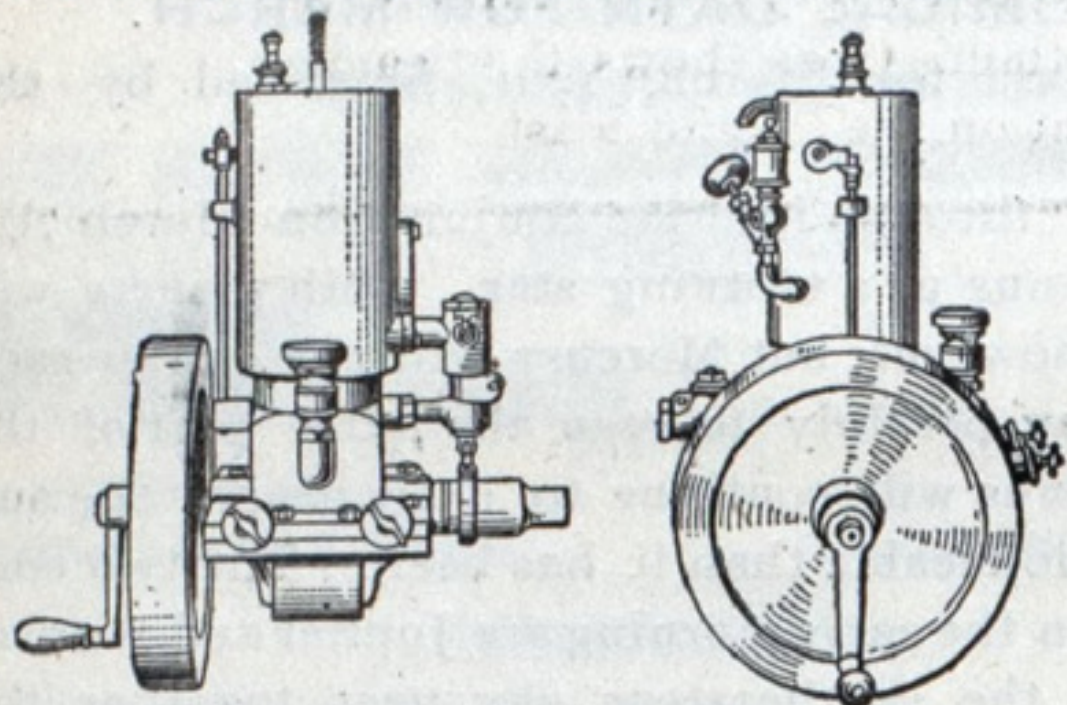
"The state of Michigan has lost a great deal of money by its arbitrary taxation of vessel property. If this bill is passed, it will restore the vessel property that Michigan has lost.

We have now the states of Wisconsin and Michigan seeking to adopt the same rate of taxation as prevails in Minnesota. It is possible that a uniform rate may be applied on tonnage at all states bordering on the lakes.

Jenks Ship Building Co., has obtained another contract for a large steel steamer, to be an exact counterpart of the Capt. Thomas Wilson, turned out by them last season, and work thereon will be commenced shortly. The company is considering several propositions from other towns for the removal of their plant, their present yards not being conveniently situated, and unless some active efforts are made by citizens to restrain this flourishing industry it may be lost to Port Huron.

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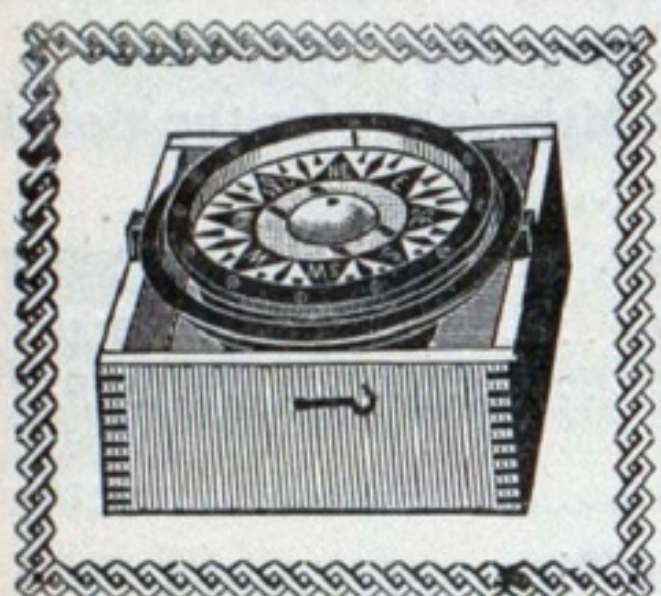
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ENGINEER VERSUS PILOT.

We have had occasion to say that the branch of the Treasury Department known as the Steamboat Inspection Service was conducted more on the lines of a secret service bureau than a department whose acts and rulings ought to be given due publicity.

Contrary to the foregoing statement, we have the somewhat unique experience of furnishing an interesting decision from the fifth district, as follows:

STEAM VESSEL INSPECTION SERVICE,
OFFICE OF SUPERVISING INSPECTOR, FIFTH DISTRICT,
DUBUQUE, IOWA, February 21, 1901.

Messrs. Monaghan & Chalk, U. S. Local Inspectors, Duluth, Minnesota.

Gentlemen:—On January 4, 1901, I received your communication under date of January 3, 1901, stating that you were unable to agree upon a decision in the matter of complaint of Walter W. Wood against Arthur Van Alstine, engineer on ferry steamer Estelle, for refusing to serve in his official capacity on said steamer October 18, 1900, with Mate Walter W. Wood, for the reason that said Wood was not a member of the Licensed Tugmen's Protective Association of Duluth, requesting me to decide the case as provided in Section 4452, United States Revised Statutes.

The complainant, Walter W. Wood, states, "that on the morning of October 13, 1900, he reported for duty on ferry steamer Estelle, a duly enrolled and licensed vessel, that he was met by George Wilson, engineer of said steamer, who informed complainant that the Licensed Tugmen's Protective Association of Duluth had passed resolutions, the previous evening, directing the said Wilson not to serve as engineer on steamer Estelle if complainant, Walter W. Wood, attempted to perform the duties of pilot thereon. That said George Wilson then informed complainant that he could not obey any signals received from complainant, for the reason that complainant was not a member of said association, of which George Wilson was a member. Complainant again went on board said vessel about six o'clock P. M., and demanded of said Wilson and Van Alstine, engineers, a written statement of why they refused to sail with him on said vessel. That Van Alstine then informed complainant that he could not serve as engineer on said vessel if complainant was employed thereon for the reason that complainant was not a member of the Licensed Tugmen's Protective Association, of which said Van Alstine was a member, and that said Arthur Van Alstine and George Wilson each severally refused to give complainant a written reason why they would not obey affiant's signals and serve as engineer under his pilotage, and that thereupon the master of said vessel informed complainant that owing to the arbitrary conduct of said George Wilson and said Arthur Van Alstine in refusing to sail with complainant, and their refusal to obey his signals, said master was unable longer to

hire complainant as pilot of said steamer, and that by reason of arbitrary and unlawful conduct of George Wilson and Arthur Van Alstine complainant was discharged from his employment on said steamer Estelle and has ever since been unable to obtain employment thereon."

According to the testimony of Walter W. Wood, the complainant, when he visited the steamer Estelle on the morning of October 18, 1900, he met Capt. Cole and said, "I will take her." That Capt. Cole then said that he had been on nights all the season and would stay on during the day, and Wood then said, "All right, I am not particular about that," and then went and saw the engineer. The only reference to be deduced from this testimony is that Wood gave up the day trip on that day because Capt. Cole preferred day work, and Wood consented; so any failure to work that day did not arise from the refusal of the defendants to perform their duty. Wood further testifies that he then went and talked with Wilson, who said, "the committee came down from the association and we concluded that you could not sail with us * * * under order of executive committee could not let you ride on this boat." If this statement of Wilson had resulted in any hindrance to commerce and the evidence of Wood in this respect was true, in my opinion Wilson would have committed an offense under Section 4449, United States Revised Statutes, but the fact is, Wood had already consented to let Capt. Cole go out on that day. It is true that Wood was soon after discharged by Capt. Ryan, but it nowhere appears affirmatively and clearly that it was on account of Wilson's statement. According to Ryan's statement he discharged Wood in fear that the association would tie up his steamer, and he gives no other reason. Wood further testifies that he went back in the evening and demanded written reasons from the engineers Wilson and Van Alstine, for refusing to sail with him, and that Van Alstine replied, "It is none of my damned business." This is the only evidence connecting Van Alstine with the complaint, and the evidence of others makes it doubtful whether the words, or words like these in substance, were not addressed to the firemen. This is in substance the incriminating evidence of Capt. Wood, and, I think it insufficient to sustain the complaint. This being so, it is unnecessary to consider the other evidence for the defence, or that of Oleson. If these defendants refused to perform their duty for the reason alleged, it is to be regretted that Capt. Wood did not stand upon his rights, to perform his duties and get an explicit reason for his discharge from Capt. Ryan. It almost seems as if he acquiesced in leaving, because some one had objected to his remaining, instead of standing upon his legal rights, but be that as it may, men can only be convicted of an offense by testimony which carries conviction to the mind and, in my opinion, there is not a particle of evidence showing any delay or detention of this steamer. I therefore dismiss the complaint.

Respectfully,

JOHN D. SLOANE,
Supervising Inspector, Fifth District.

REPORTED BY THE LOOKOUT.

Billion-dollar syndicates can easily pay good wages to their lake engineers. If not, the members of the union are going to know why. A scale of wages has been made and steamboats must pay the strict rate.

The C. Reiss Coal Co.'s new dock No. 1, at Sheboygan, erected on the site of the structure burned this winter, will be operated by electricity, the first in the west. It is probable that electricity may be used in the operation of the other docks of the company later.

A gentleman had two dogs. One he called Carpenter, and the other Locksmith. Asked by a friend as to why he had given them such original names, he said: "Locksmith was so called because every time he opened the door the dog made a bolt, while the other was so called because he did odd jobs about the house."

"Epitome of Useful Information and Nautical Almanac for Ship Masters and Owners" is the title of a handy size volume of some 200 pages, compiled and published by J. J. Haviside & Son, ship riggers, of San Francisco, for gratuitous circulation. It is replete with useful information within the scope of the work, is well printed and substantially bound so that it will stand the wear it must necessarily be subjected to as a book of reference. The publication of this book is a piece of enterprise on the part of the 'Friscos riggers, that should be highly appreciated by ship owners and ship masters, to whom this book is dedicated. American Shipbuilder, New York.

Congress usually passes a general "River and Harbor" bill every other year, and such a bill is due this winter. In the appropriations of this sort the people of seaports and river towns are naturally more interested than are those of the inland regions. A seaport representative in personal conversation the other day put the case thus, in order to persuade his inland associates that they had as much to gain by a certain harbor improvement as he: "It is not the mouth which profits by the food that goes into it, but the whole body. The harbor of my city is but a mouth of the nation; by making access to it easier, goods going and coming have less to pay for transportation. This leaves more remaining as your share on what you have to sell abroad, and also makes what you have to buy cost less."

Right to Abandon Under Marine Policy.—A marine insurance policy required that, in case of loss, the assured should use every effort for the recovery of the vessel, and after its recovery should cause it to be repaired, and, if assured neglected to do so, the company might do it for the assured's account, and provided that there was to be no abandonment as for a total loss on account of the vessel grounding, unless the injury sustained was equivalent to 50 per centum of the agreed value of the vessel. Held that, in an action on the policy for loss of a vessel by sinking, it was proper to instruct that, if the expense of repairing was equal to or greater than one-half of its value, then the assured had a right to abandon it, but if assured unreasonably refuses to join the company in raising the boat, when it could have been raised and repaired at less than 50 per cent. of the agreed value, he was not entitled to recover the whole of the policy. Jones et al. vs. Western Assurance Co., of Toronto, 47 At. Rep. (Pa.) 948.

ERIE CANAL REPORT.

Major T. W. Symonds, of the United States Corps of Engineers, who was a member of former Gov. Roosevelt's canal commission, has issued a statement to the effect that State Engineer Bond has been somewhat misrepresented by reports sent out from Albany concerning estimates of the cost of an electric or steam barge canal. Major Symonds was a member of the board of consulting engineers which prepared estimates, and is in a position to knowingly speak of the matter. He says:

"The statements purporting to give the results of the recent survey for a barge canal are very incomplete, unfair and unfortunate, and some of the statements have been misunderstood and misconstrued. It is unfair to Mr. Bond and his associate consulting engineers to infer from anything in his report that an 'electric' canal is proposed or assumed as the canal of the future. Following the lead of the Roosevelt advisory commission, Mr. Bond and his engineers discarded the towpath from the estimate, rightly thinking that the towing of canal boats by horse and mules has no place on a modern canal, and made all the estimates with the idea that the method of canal boat propulsion would be by steam, as at present, or by the use of electric or some other power not involving the use of a towpath. This is all the foundation there is for the 'electric' canal canard that has flown over the country. In all the discussions of Mr. Bond and his board of consulting engineers steam was the only motive power considered, as there has as yet been no suggestion of a practical system of electrical propulsion suited to Erie canal conditions. So the grand bugaboo of monopoly in canal propulsion can be dismissed. If the canal is enlarged it will be free to everybody to be used in the only practical manner in which it can be used, and on exactly equal terms to all.

CANADIAN DREDGES.

It is announced that Hon. Mr. Tarte has given an order to Polsons of Toronto to build an immense steel dredge, the largest in Canada, the same to cost \$250,000, and to be used on Lake St. Peter. The new dredge will be in the form of a barge, 160 feet long, 12½ feet deep and 40 feet wide, and capable of handling 40,000 yards of earth per day.

It is further stated that if this dredge gives satisfaction, Hon. Mr. Tarte will have two more built of the same kind.

THE ROLLER BOAT.

The Knapp roller boat, re-vamped, is to roll from the yards at Prescott, Ont., in a few weeks ready for a second trial. The engines, which were at each end of the boat, have been hung in the centre, and the paddles extend the entire length of the boat.

Mr. Frederick A. Knapp, the inventor, says he does not care two straws for the public, which has been having so much fun at his expense, but he wishes to set himself and his boat right on one point. This, he says, is the question of speed. "The public think that I think my boat will travel at the rate of a hundred miles an hour. That is all wrong. If I get eight miles I will be well satisfied. I should not be surprised to get more, however. The boat was con-

demned for her failure on the public trial. This was not because the principle of the boat was wrong, but merely because the engines were new and tight and refused to respond to the force of the steam. I afterward got more than eight miles an hour from my boat. The way I expect to make speed is not by fast steaming, but by great carrying. For four or five hundred thousand dollars I can build a boat five hundred feet long and ninety-six feet in diameter, which will carry four million bushels of grain. If this boat crosses the ocean at eight miles an hour I will be making speed in moving cargo. The ordinary million-dollar freight carriers would not move four million bushels of grain to Europe in a year.

THE RIVER AND HARBOR BILL.

According to the present situation it looks very blue to say the least for the river and harbor bill. The bill has been reported in the Senate, but there is great danger that the senate will not be able to reach it in time to act upon it, and, even if it were passed by that body, there would be still grave doubt as to its passage, for the reason that the Senate bill differs widely from the House bill there would undoubtedly be prolonged discussion when the bill went to conference. Chairman Burton of the House committee, who worked so hard to frame the bill, is hopeful that the army bill now pending in the Senate will be disposed of in time to allow the river and harbor bill to come up, but his hope is not founded on any favorable indication. The bill was delayed first because the ship subsidy advocates attempted to use it as a club to quell opposition to the subsidy measure, and then later it was decided to hold it up again in the hope of overcoming opposition to the army appropriation bill and the amendments pending to it. It is doubtful, however, that at this late hour, even if the bill passes the Senate, an agreement could be reached with the House regarding the amendments, and then would come the President's signature.

VESSELS CLASSED.

Vessels classed and rated this week by the American Bureau of Shipping in the "Record of American and Foreign Shipping," are as follows:

American screw Baltimore, schooner May V. Neville.
British barkentine Edith Sheraton, and British three masted schooner Laura.

One hundred and twenty-five ocean and coasting steamship stewards and others were organized at a meeting held in New York a few days ago, as the New York Steamship Stewards, Cooks, Bakers and Waiters' Association. James Troy, cook of the steamship Moro Castle, was chairman of the meeting, and C. H. Evans, also of the Moro Castle, acted as secretary. It was decided to apply for a charter to the International Seamen's Union, which is affiliated with the American Federation of Labor. Before officers were elected, James O'Brien, steward on board of a coasting steamer, said he had a few words to say. "I want to tell you that we have a few things to do before the union gets its sea legs," he said. "We'll have to define our respective duties. Sometimes the captain comes down to me and says that I ought to hang up more curtains or handle the provisions differently. He means well, but I have to say to him, 'Captain, I'm handling the grub and attending to the interests of the company, and you're navigating the vessel.'"—Ex.

ON the Pacific coast, lumbering on a large scale has been carried on to a high degree of perfection, especially in the State of Washington, in the Puget Sound country, in Oregon on the Columbia, and in northern California in the Eureka red wood district. In the distribution of lumber by water, Tacoma is the chief outlet on Puget Sound. The red wood of California is marketed very largely through San Francisco and Eureka. Portland, Ore., shows the heaviest shipments by rail of any point on the Pacific coast.

Government Proposals.

U. S. ENGINEER OFFICE, 1637 Indiana Ave., Chicago, Ill., February 4, 1901. Sealed proposals for dredging in Chicago harbor will be received until 12 noon, central time, March 12, 1901, and then publicly opened. Information furnished on application. J. H. WILLARD, Maj., Engrs. 6-9

U. S. ENGINEER OFFICE, Pittsburg, Pa., February 7, 1901. Sealed proposals for completing two locks and dams and building four locks and dams on Monongahela River, above Morgantown, will be received here until 12 M., March 9, 1901, and then publicly opened. Plans may be seen here. Information furnished on application. C. F. POWELL, Maj., Engrs. 6-9

SEALED PROPOSALS will be received at the office of the Light-House Board, Washington, D. C., until 2 o'clock, p. m., March 2, 1901, and then opened, for furnishing the materials and labor of all kinds necessary for the construction and delivery of the twin-screw, steel, steam light-house tender Larkspur, in accordance with specifications, copies of which, with blank proposals and other information, may be had upon application to this office, or at the office of the Light-House Inspector, Tompkinsville, N. Y. F. J. HIGGINSON, Rear Admiral, U. S. N., Chairman. 7-8



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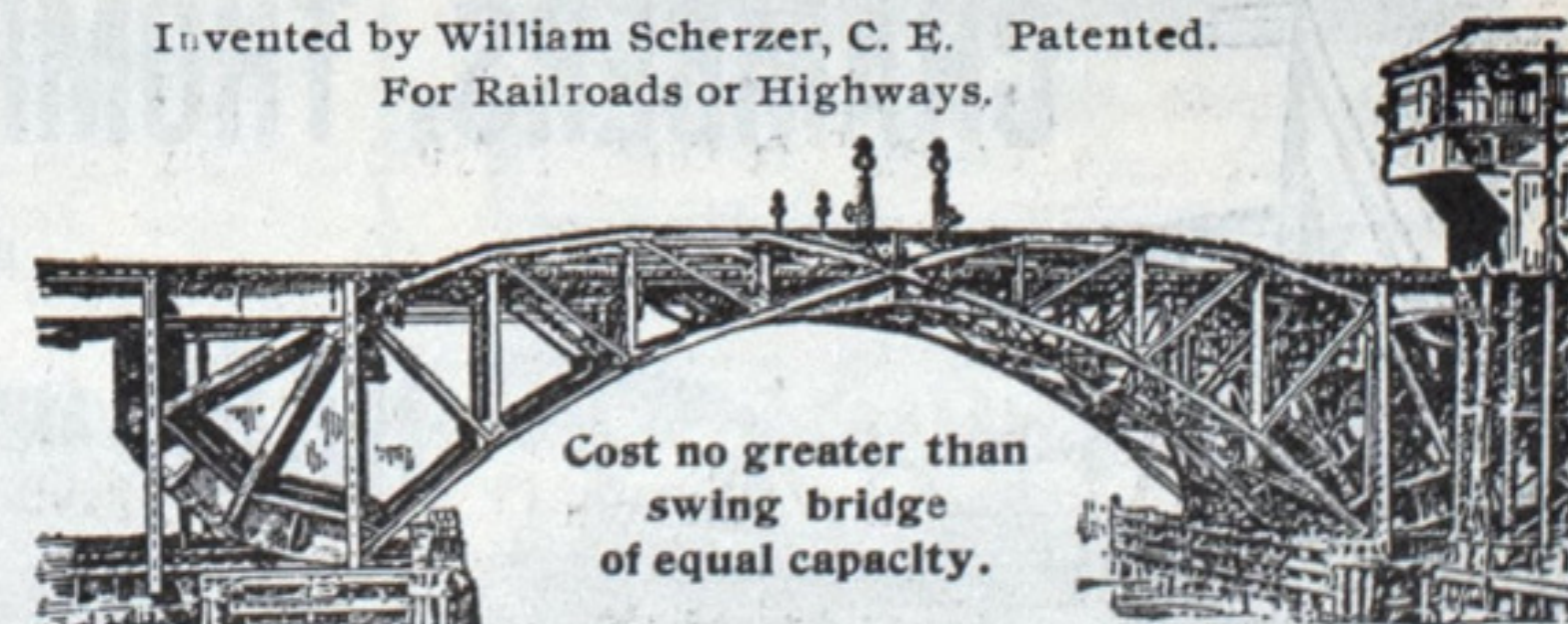
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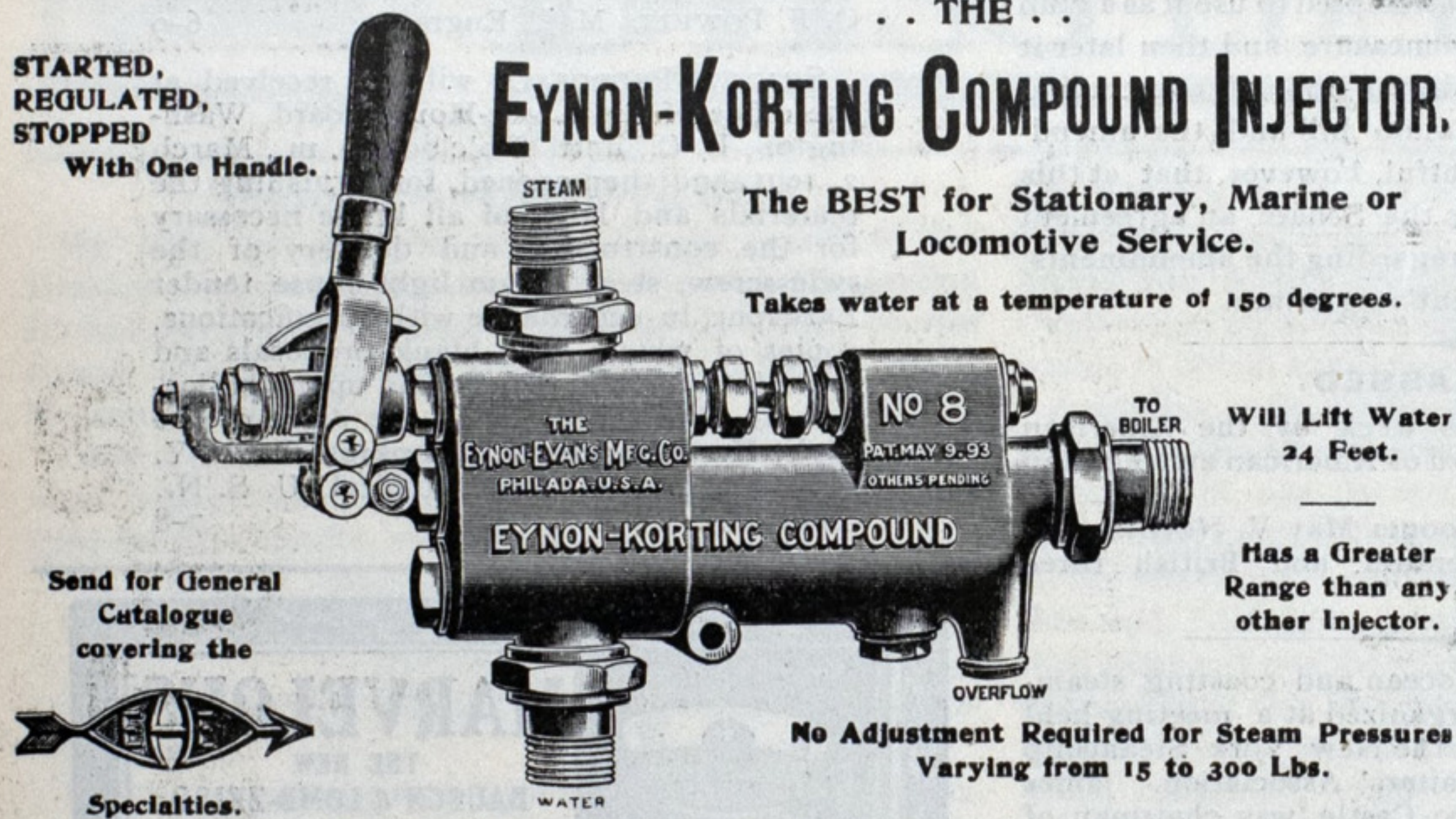
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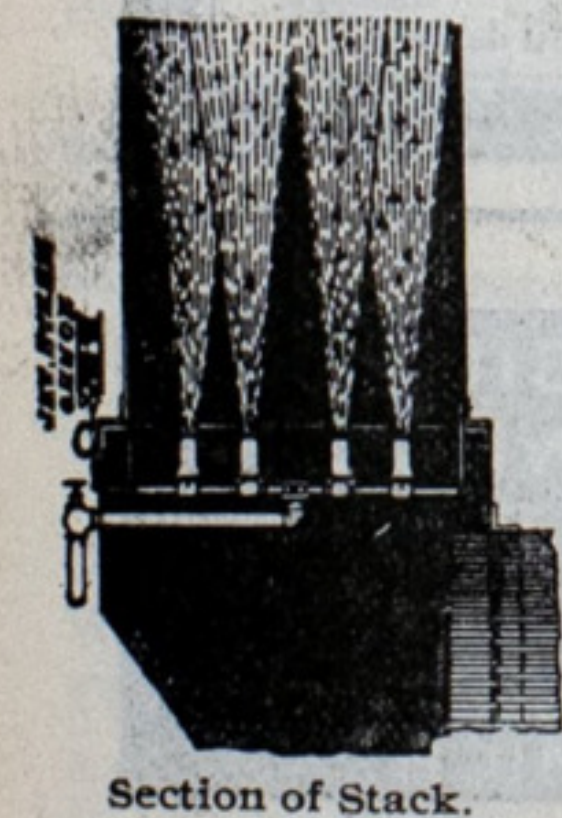
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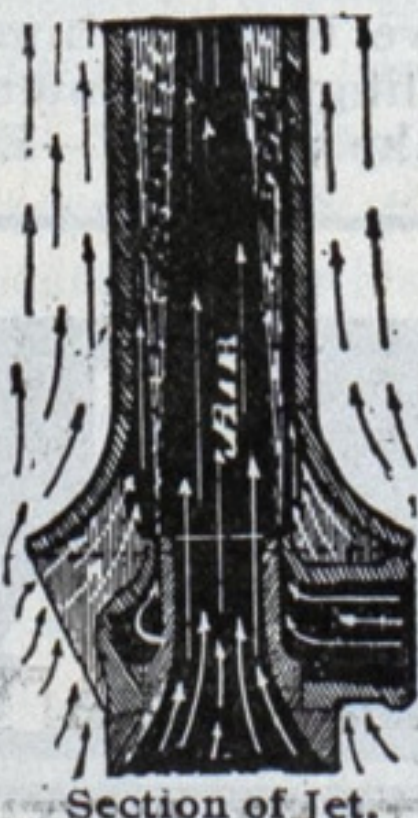
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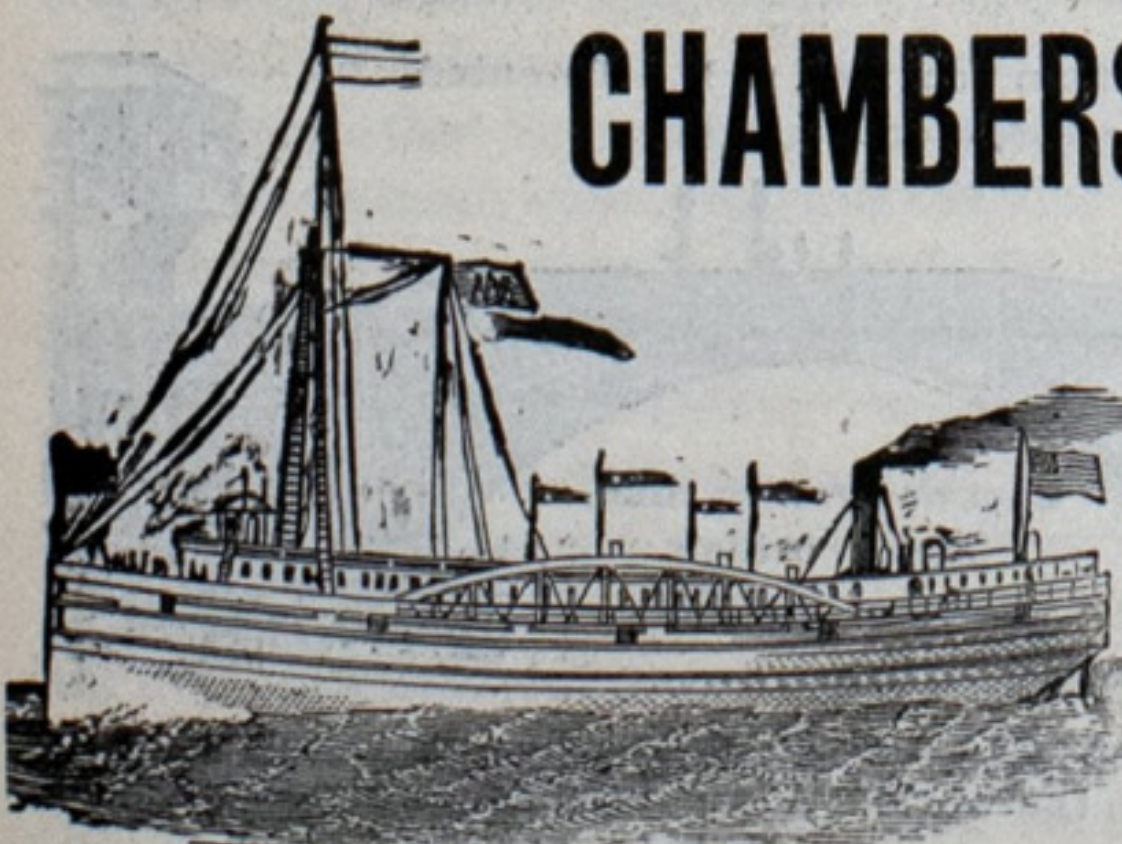
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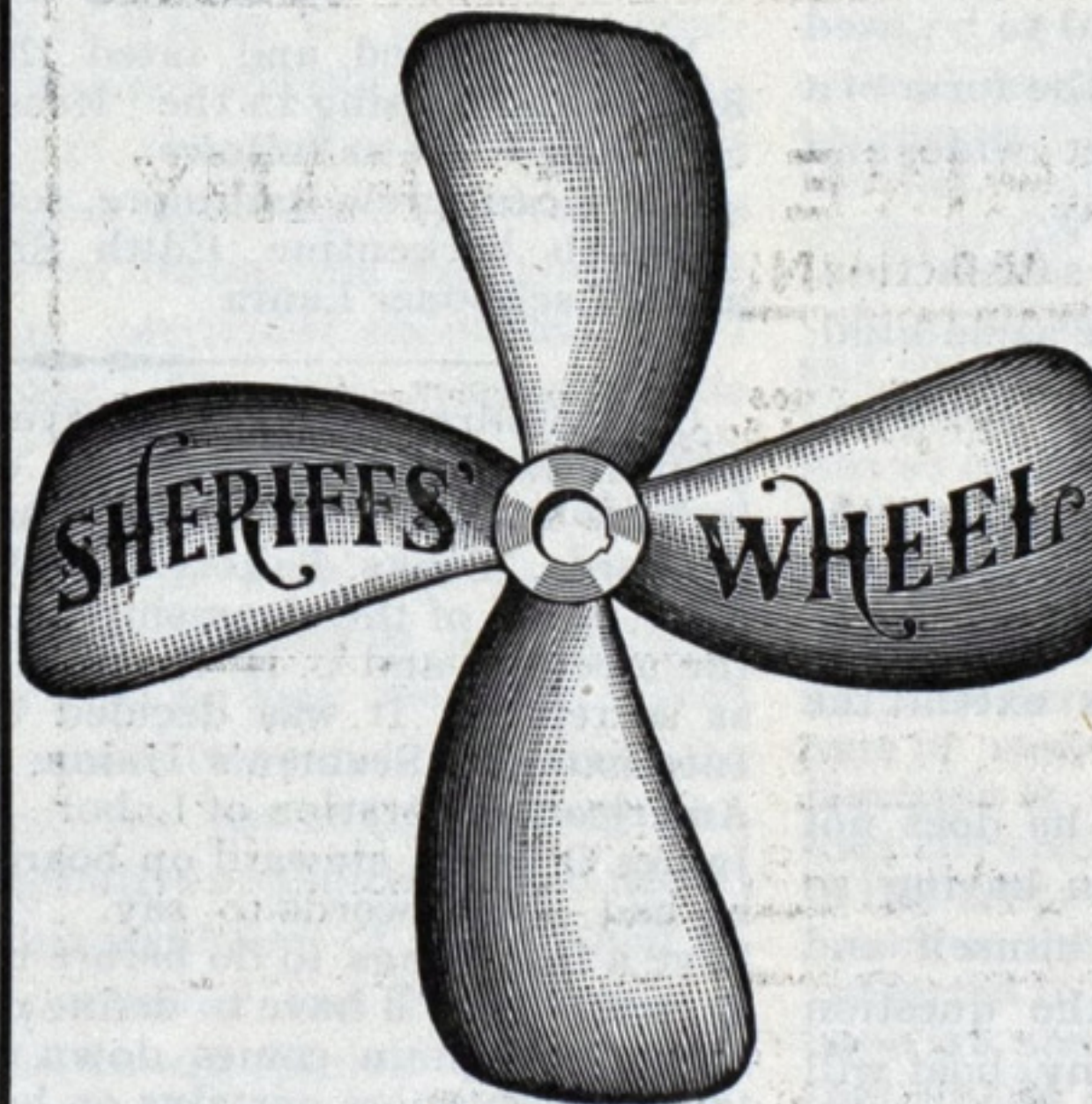
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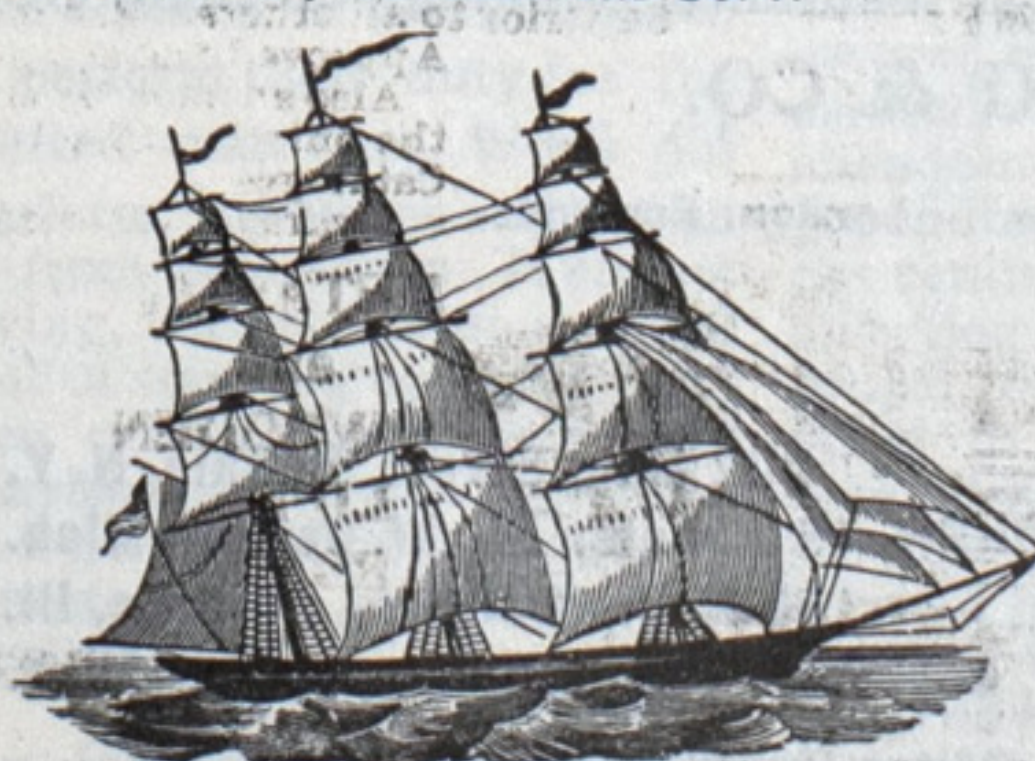
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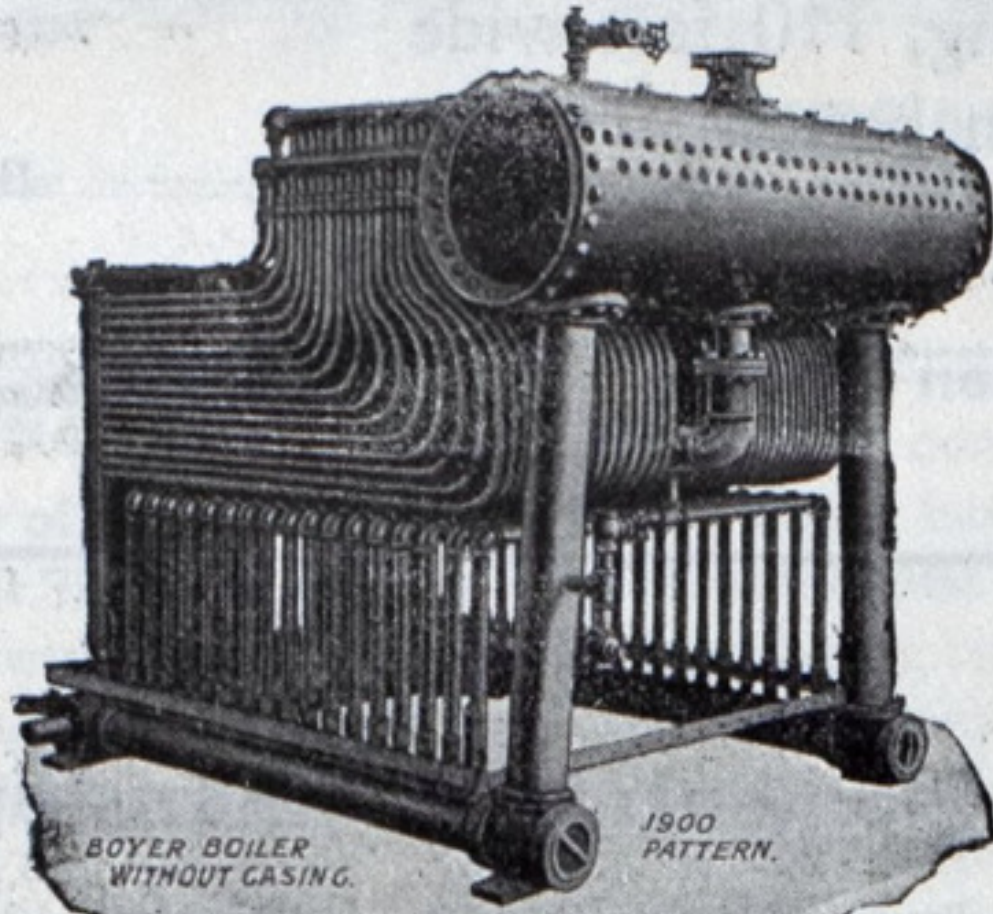
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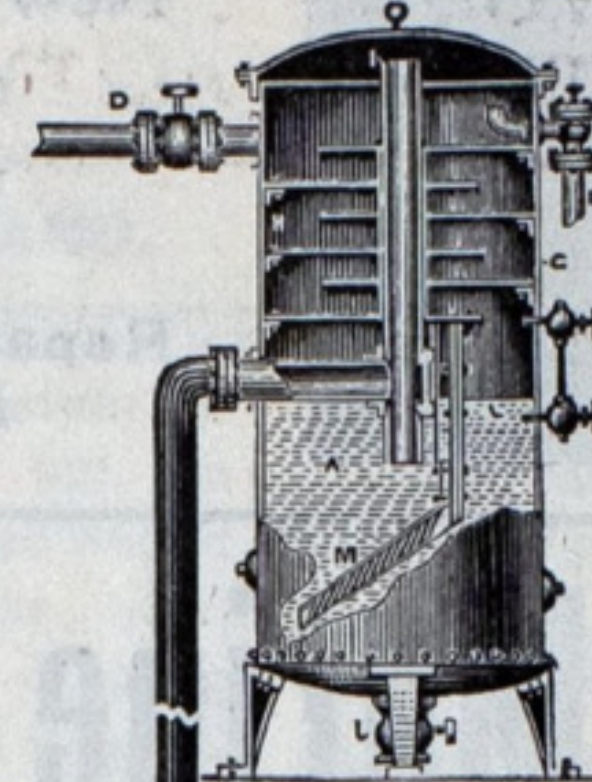
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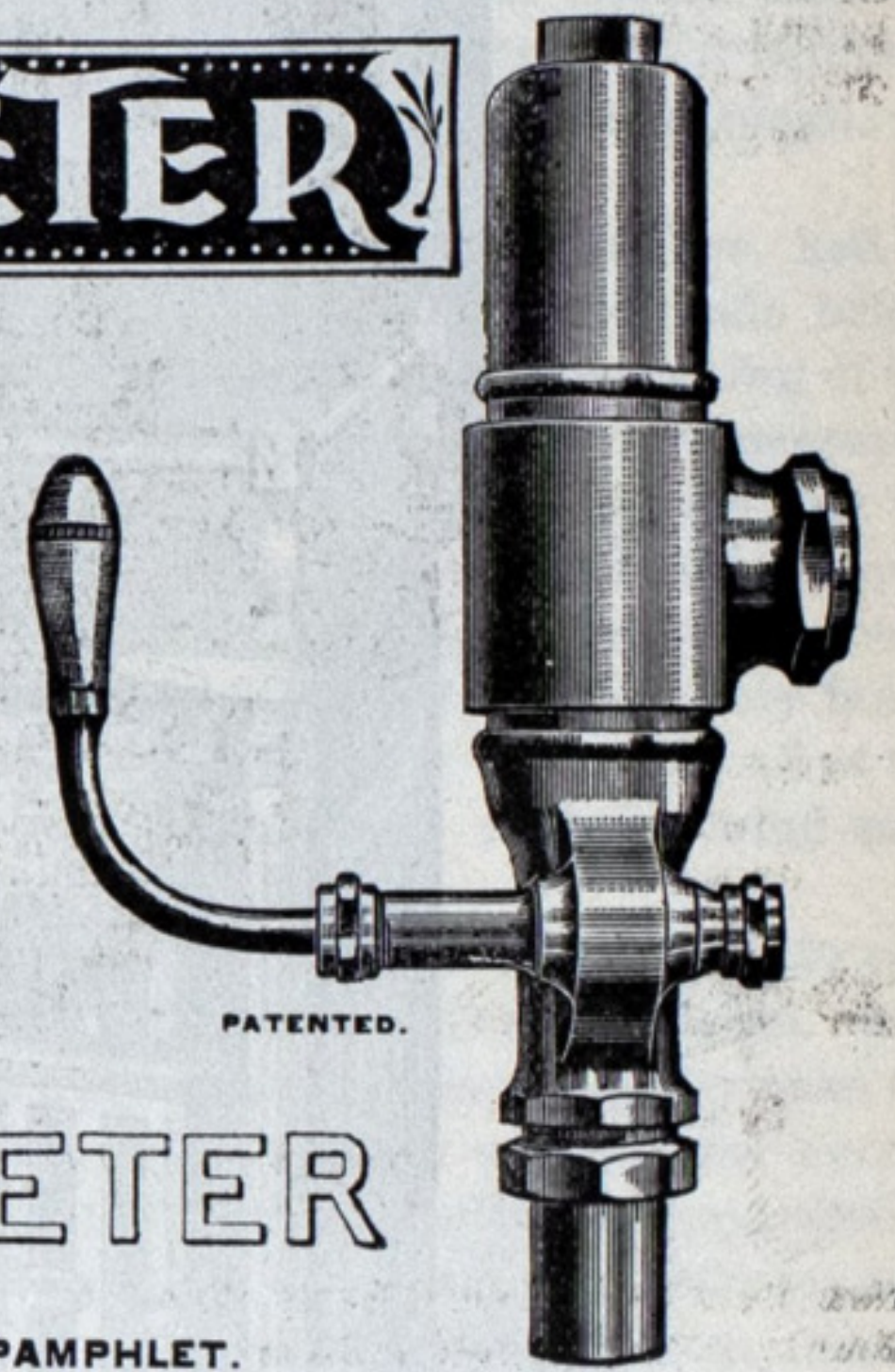
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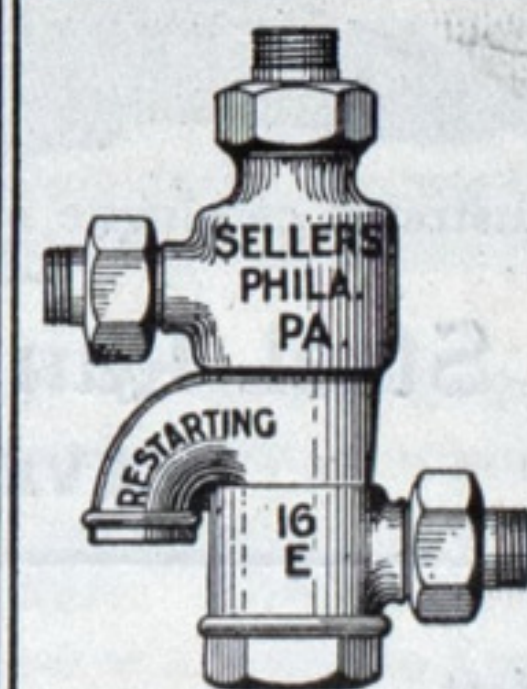


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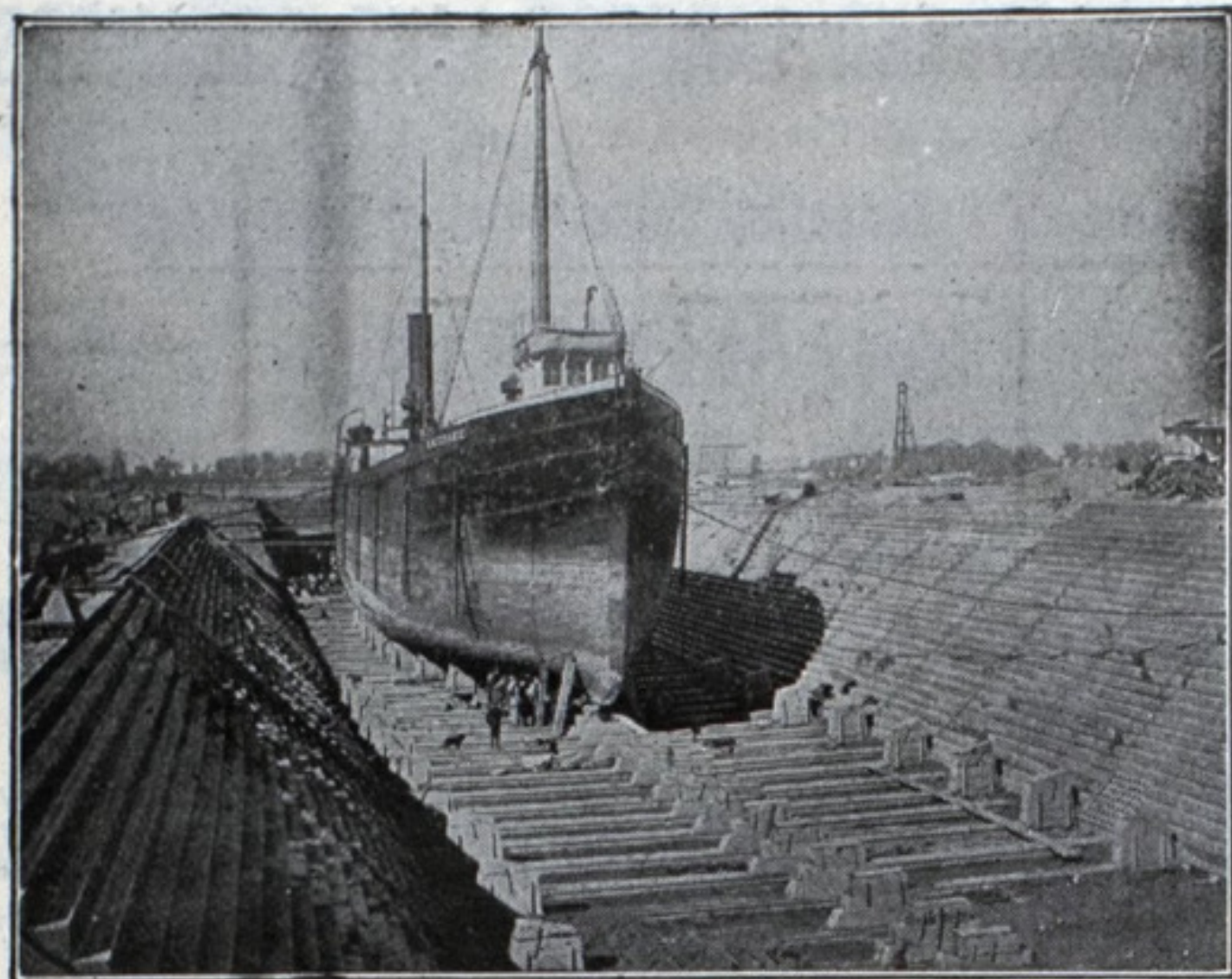
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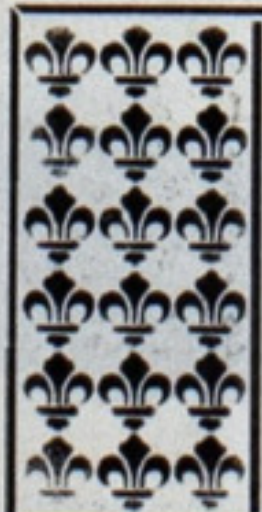
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